THE AUTOMOBILE

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TO TOUR 6,000 KILOMETERS, ALL IN FRANCE

By W. F. BRADLEY.

PARIS, August 6.—The European Circuit, which was to be the greatest auto touring contest ever seen in this part of the world, came to an untimely end, notwithstanding the support of the national automobile clubs of France, Austria, Germany, Italy, and Belgium. Believing there was good advertising matter in the scheme, *Le Matin*, a go-ahead Paris journal, took up the tour, increased the distance from 5,000 to 6,000 kilometers, to be run entirely through France, got together a prize list of about $15,000, and invited the world to engage free of cost. A wheel, an endurance, and a fuel consumption test were provided for, the wheel test being provided with three classes: for ordinary pneumatics, anti-skids, and spring wheels. The endurance class made provision for seven classes of vehicles, from motorcycles to heavy four-cylinder cars, and the fuel consumption test was given five classes. Everything seemed to be provided for.

A very complete organization was put on foot. The 6,000 kilometers of the circuit, which had to be covered in 25 daily stages of rather more than 200 kilometers each, were to be guarded by 120,000 troops, 42,000 direction porters were placed on the route, special detailed maps of the daily runs were given

START FROM PLACE DE LA CONCORDE, PARIS, OF THE LONG TOUR—AUTOMOBILE CLUB OF FRANCE IS LOCATED IN THE LARGE BUILDING WITH THE COLUMNED FRONT SHOWN IN THE PICTURE.

THE ROUTE OF THE MEUSE CIRCUIT HAD MANY PICTURESQUE STRETCHES OF ROADS THAT WERE UNIFORMLY EXCELLENT.

to every competitor, elaborate preparations made for the forwarding of baggage, hotel accommodations, mail service, and daily rejoicing. The basis of the test was regularity of running, the victor being the one having covered the greatest number of stages with the lowest number of penalty points. In addition, each class and sub-class would have its winner.

Only six days before the starting of the tour the cylinder dimensions and weights of chassis were found to be unsatisfactory and had to be changed, an operation which did not tend to simplify the basis of the tour. Notwithstanding free entries, the big prize list, and the tremendous booming which *Le Matin* gave to the competition, manufacturers responded half heartedly and were in consequence charged by the organizers with being afraid of "the only true automobile test the world has seen."

For the fifteen classes but 38 vehicles presented themselves for weighing in at the Tuileries Gardens, and of this number only 22 were touring cars, the remainder being motorcycles, wheels, and small runabouts of less than six horsepower. By allowing late comers to be weighed in up to one hour before the starting time—a proceeding which called forth a protest from the punctual entrants—a total of 46 was obtained.

INSIDE THE TUILERIES GARDENS BEFORE LE MATIN'S TOUR.

Gayly bedecked with flags, provided free of cost, and each one carrying an enormous advertisement for *Le Matin* in the rear, the 46 started from the Place de la Concorde for Deauville, which was reached by 25 of the 39 endurance competitors without penalization. From this fashionable seaside resort the competitors will run down the west coast of France, along the south, up the whole line of the eastern frontier, take a turn through the industrial northern region, and arrive in Paris on the 28th of this month. Excepting the third, fourth, fifth, and sixth endurance classes the contest will be a walkover, many of the classes having but two competitors. In the cross-Mediterranean motorboat race *Le Matin* provided the biggest demonstration the world has ever seen. Its automobile competition is just as pretentious, and is likely to have a no more successful ending. French manufacturers, realizing this, have for the most part kept out of the tour, and have been roundly abused in consequence. The public, however, misled by the flutter of flags and the beating of drums, are still being fooled.

PLANS FOR THE PARIS DECEMBER SALON.

PARIS, August 6.—Automobile manufacturers are applying early for stands in the ninth annual Paris Salon, to be held in the Grand Palais from December 7 to 23. In its main lines no departure will be made from last year's exhibition; automobiles and all accessories will be housed in the Grand Palais; industrial vehicles, boats, balloons, etc., being placed in temporary buildings to be erected on the Esplanade des Invalides, separated only from the main building by the Alexandre III bridge.

Requests for space must reach the Exhibition Committee, 6 Place de la Concorde, before September 20, the price for stands being $20, $10, and $5 per metre, according to position. The drawing of lots for stands will take place on October 1. As in previous years the central portion of the exhibition hall will be reserved for French firms having largely contributed to the development of automobilism, all other parts of the exhibition being allotted to either French or foreign firms according to the drawing. The committee declare that the artistic side of the exhibition will be more important than ever before. The two buildings on opposite banks will help this idea.

THE BELGIAN CRITERIUM.

BRUSSELS, August 6.—The Belgium Criterium, which began July 21, came to a successful conclusion a week later. The event was under the auspices of the automobile clubs of Belgium, of Spa, and of Namur and Luxemburg. The race followed five daily journeys. Fifty cars started from Spa on the first day's run to Nijmegen. Cologne and Luxemburg formed the two succeeding stages, the distance up to that time having merely eliminated six competitors. Several bad corners were encountered on this, the third day's run, and although the road surfaces were on the whole excellent, yet, curiously, tire troubles were rather numerous. On the following day cars set out for Rheims, 226 kilometers distant, and on the 25th inst. the competitors reached Dinant, from which place the start took place for the race over the Meuse circuit, the chief places on which are Gedinne, Bievres, Houdrémont, and Beauraing. It will be remembered that the first five days' touring was intended to act as a kind of eliminating event for the actual racing which took place on the last two days, but in any case only those cars entered in sections 3 and upwards in Class 1 were eligible for or required to take part in the Meuse race. In all there were thirty-one competitors in this event, and these were started at intervals of a minute, from 4 o'clock in the morning. The circuit had to be covered five times, which made a total distance of about 500 kilometers, a somewhat remarkable length for a one-day touring car competition.

The victory fell to Hautvast, who drove a Pipe. It was a close race, however, for Croquet, on his Darracq, was little more than twelve minutes behind on the last lap, while at the end of the fourth round he was actually leading by nearly five minutes. Both these competitors were in the sixth section of Class I. In the fifth section Rigoly made the best performance on his Gobron-Brillie, but he was closely followed by Elskamp on a similar make of car. In the fourth class Fischer, on his Vivinus, secured first place, but it was Deplus, on a Pipe, who made the running for the first four laps. Coquard, driving an Aries, won the third section, and in contrast to the other successful competitors, he maintained his lead from the beginning. In this latter section only four laps were completed owing to the time limit. What might have been a very serious accident occurred to Dahmen's

A TYPICAL CONTROL ON THE MEUSE CIRCUIT.

Benz car, which ran into a tree and afterwards caught fire. Happily, however, the mechanician was only slightly hurt.

Naturally enough, the principal excitement of the race was caused by the very sporting performances of Hautvast and Croquet. Enthusiasm was raised to a high pitch during the third run, when it was found that Croquet had obtained the lead, but the cheering was tremendous when Hautvast once more got in front, and ultimately won the race.

Those who were ineligible to take part in the race on the Meuse Circuit were able to compete in a supplementary hill-climbing event on the Cotê de Malchamps, which took place on the next day. Of the fifty-one starters, forty-three finished the 1,200 kilometers tour. The following are the cars receiving the chief awards:

Prize for best Belgian car.—Pipe (Hautvast).
Coupe de Spa for best foreign car.—Gobron Brillie (Rigoly).
Special Gold Medals.—Rochet-Schneider, Darracq, Ruhl.
Gold Medals.—Metallurgique, Gobron-Brillie.
Silver Medals.—Darracq, Pipe, Gobron.
Dinant Prize.—Ruhl. Bronze Medal.—Pipe.

HAUTVAST, THE PIPE DRIVER, WHO WON THE PRINCIPAL HONORS—NOTE THE SUPERB ROAD HE IS FLYING OVER.

THE VANDERBILT CUP.

New York, August 16.—Application was made to-day at Mineloa to the Board of Supervisors of Nassau County, Chairman J. D. Thompson, of the A. A. A. Racing Board and Vanderbilt Cup Commission, asking in behalf of the A. A. A. for permission to hold the 1906 race and the American Elimination event for the Vanderbilt Cup in the confines of that county.

It is understood that Supervisors Jones and Willetts are in favor of the application, though Supervisor Seabury may stand in opposition, as he did a year ago. There seems to be no doubt, however, as to the granting of the permission, as 1,500 residents of Nassau County last spring petitioned the A. A. A. to hold the race in their county.

While, in the main, the same course as was used last year will be employed, there is a possibility that a partial change may be made at the east end of the circuit.

The Maxwell Car and Its Driver.

Tarrytown, N. Y., August 13.—Rapid progress is being made in the construction of the two Maxwell cars for the Vanderbilt race. The one which shows up the best will be driven in the American Elimination race. The entire engine of the eight-cylinder car is now on the testing rack, while the chassis is about ready for assembling. This is practically the union of two of the regular four-cylinder engines used in the large Maxwell car, with some variations in the oiling system and some reductions in the size of castings to bring the machine down to weight so far below the limit that there will be distinct gain by reason of the car's lightness.

J. FRED BETZ, 3d.

The twelve-cylinder car, to be driven by J. Fred Betz, 3d, is about ready to be assembled. A study of the parts as they stand ready in the Maxwell factory shows that there has been a remarkable saving effected in the construction of various of the rods and other portions of the engine, with the result that the car will be remarkably light, while retaining great strength in its component parts. By the routing out of channels in the piston rods and the channeling of th ebushings, the loss in weight will be made to play a part in the oiling of the engine, as the hollow parts will be used to distribute oil to both ends of the rods. In the pistons the wrist-pins are constructed hollow, and there is a saving of weight in the construction of the cylinders and various engine supports. Nearly every part of this car has been made in duplicate, and in some cases the part has been made over several times, in order that absolutely perfect units only may compose the machine. A special corps of workmen are busy on the two cars, and these men are working under the personal supervision and direction of J. D. Maxwell, the designer. Visitors to the factory are not allowed to inspect the cars.

Concerning the Three Air-cooled Frayer-Millers.

Columbus, O., August 13.—The three Frayer-Miller racers entered in the Vanderbilt Cup race will be shipped to New York about September 1. One of the machines has been completed, and the two others are being assembled by Lee Frayer, the designer and inventor, who will drive one of the machines. E. H. Belden, of Pittsburg, and F. E. Moskovics, of New York, the other drivers, will arrive here next week to study the machines and try them out.

Various Notes of the Race.

Walter Christie will drive his own car, and he confidently counts upon making qualification in the Elimination event.

M. M. Caillois and Le Blon, the two French drivers engaged to drive Thomas cars in the American Elimination, will arrive August 24. Mortimer Roberts will be the third Thomas driver.

Herbert Lytle has been selected to drive the Pope-Toledo, the details of which have been carefully guarded. It is said that the car will have a superabundance of horsepower.

John Haynes, a cousin of Elwood Haynes, will drive the 50-horsepower Haynes in the American Elimination race. Last year Mr. Haynes drove a car 10,000 miles in trying it out.

Ralph Mongini will drive the Matheson car; Ernest Keeler will be the Oldsmobile star, but the driver of the B.-L.-M. has not yet been named, nor has the car emerged from the shop in Brooklyn.

Joseph Tracy is spending more or less time at Bridgeport, Conn., where the two Locomobile racers are in process of construction. Whichever car proves to be the faster will be used in the American Elimination.

George Robertson is to be the Apperson pilot, and only returned the other day from a visit to the Indiana factory, where he inspected the racer which he is to drive. He expects to be on the road with the car not later than September 1.

Robert Graves, the owner of the Mercedes which Janetzy will drive in the cup race, last week returned from Europe, where he has been doing considrable touring since the Grand Prix. Mr. Graves brings news that C. L. Charley will bring over from Paris a fourth car and substitute driver, in case anything should happen to one of the three German entries in the preliminary practice. Mariaux will drive M. Charley's car, while Foxhall Keene will be the third Mercedes entrant.

ROCHESTER'S ROAD RACE OFF.

Rochester, N. Y., Aug. 13.—According to W. J. Morgan, who was to manage the details, there will be no automobile race in this city on Labor Day, and probably not this year. Mr. Morgan made this announcement while passing through this city on his way from Buffalo to New York. Lack of enough entries is the direct cause of the postponement of the race. The local club figured that fifteen cars would have to be entered to make the proposition a paying one. Mr. Morgan has visited all the big factories and found it impossible to secure the needed number of entrants. The proposed race in this city was to be different than others which have been held. It was planned to have this a test of touring cars only, the machines not to be of special construction but exactly as they come from the factory to the buyer.

The postponement of the race is a sore disappointment to local enthusiasts, as well as to those in nearby cities. The local association had just brought things to a pass where everything looked rosy. The opposition of the farmers had been overcome. The city engineer had been prevailed upon to look over the course, and he had practically consented to stand part of the expense of putting it into shape and render it safe. Then the announcement of Mr. Morgan threw cold water over the entire enthusiasm. There is a probability that the race may be run off in November, but the general idea is that there will be no race until next season. Decoration Day, 1907, is mentioned as a good date.

It is understood that several concerns which did not have their 1907 cars ready were disinclined to race their 1906 models, of which they had in stock not enough to fill present orders.

LONG BEACH WILL CELEBRATE AGAIN.

Long Beach, Long Island, will be the scene of another race meet on August 18, the Long Beach Country Club having planned an automobile carnival for that date. In addition to speed contests there will be a parade of cars, and a prize will be given for the best decorated machine. It is possible that the New York Motor Club and the Long Island and North Jersey clubs may hold runs to the beach for the meet, the distance being only twenty-five miles from New York City.

CLEVER DURAY WINS THE ARDENNES

BASTOGNE, Belgium, Aug. 13.—Duray, the brilliant Belgian driver, to-day won the Circuit des Ardennes, closely pressed by Hanriot, whose Darracq was less than two minutes behind the winning De Dietrich. Of course, Duray received an enthusiastic welcome as he finished the final and seventh round of the 85.4 kilometer course, which was treated with tar that laid the dust very effectively. The total distance of the race was 372.8 miles, and Duray's time was 5h. 38m. 39s., an average of about 66 1-4 miles an hour, which is twenty minutes faster than Hemery's time of a year ago.

Hanriot's figures were 5h. 40m. 31s., and third came Rougier, another De Dietrich pilot, in 5h. 50m. 11s.

Duray assumed the lead on the third round, and was never headed thereafter, despite the fact that Hanriot did some exceptional driving in the concluding round.

DURAY, THE 1906 HERO OF THE ARDENNES CIRCUIT.

Though 27 cars had been entered for the race, only 19 started, and 12 of these completed the race. One of the absentees was Foxhall Keene, the well-known American, who was scheduled to drive a Mercedes. Demogeot, the successful Darracq substitute for Hemery in the Florida races, was one who fell by the wayside in to-day's race. None of the Darracqs had the removable rim, and Demogeot's troubles were of the tire variety.

The start was at 7 o'clock in the morning, and a summer sun supplied distressing heat that was only partially tempered by a slight breeze. The nineteen machines were sent away at one minute intervals, Corre being the first, in a machine of the same name.

Corre was also the first to disappear on the first round, and Baras, of the Brasier team, was unlucky and smashed a wheel. Burton, a Mercedes driver, went down and out on the second round through the breaking of his clutch. Suguet, of the Brasier, quit because of a broken carbureter.

Hemery was the next who retired, and shortly after Demogeot was a tire victim. In the fifth round Bablot, a Brasierite, was the seventh unfortunate, and the remaining twelve continued to the finish.

Incidentally during the race intermediate time was taken for 100 kilometers, which Wagner traveled the fastest in a Darracq, he being clocked in 52:49, an average of 113 1-2 kilometers, or 71 miles an hour. Wagner also made the fastest round of the course, and his driving was of the spectacular sort, electrifying the onlookers. Herewith is the order of the finish:

	Driver.	Car.	H.	M.	S.
1.	Duray,	De Dietrich	5	38	39
2.	Hanriot,	Darracq	5	40	31
3.	Rougier,	De Dietrich	5	50	11
4.	Barillier,	Brazier	5	50	27
5.	Gabriel,	De Dietrich	5	52	14
6.	Clement,	Bayard	6	2	55
7.	Sorel,	De Dietrich	6	4	38
8.	Wagner,	Darracq	6	14	45
9.	Salzer,	Mercedes	6	14	50
10.	Jenatzy,	Mercedes	6	15	27
11.	Villemain,	Bayard	6	40	32
12.	Garcet,	Bayard	6	51	37

Last year Hemery won the Ardennes race with the same Darracq with which he afterward won the Vanderbilt cup, his average time in the Belgian race being 62 miles an hour. George Heath won the race the previous year, and also won the Vanderbilt cup later, and wagers are being made that Duray will also capture the big international contest to be run next October.

Notification was given by the Hotchkiss firm before the race that their three cars, which were to have been driven by Fitz Shepherd, LeBlon, and Salleron, would not contest. The Hotchkiss cars are at present being fitted with wooden wheels and dismountable rims, but as this change necessitated some alterations on the chassis to reduce weight, it was decided rather than unnecessarily hurry the work not to run in the Ardennes, but to reserve the cars for the Vanderbilt Cup race. No Italian firms were represented, both Itala and Fiat having reserved themselves for the Brescia circuit and not caring to enter for the Belgian contest at the last moment. Excepting the Mercedes team, all the cars were French.

The day before the race Pilette, driving a Gregoire racer around the circuit for the last time before the contest, took a corner too fast at Longlier and crashed with terrific force against the roadside, which is made of rock. The automobile was broken to pieces and Pilette had his right arm crushed. His goggles were shattered into a thousand fragments and pieces of glass entered his eyes and forehead. His physician takes a hopeful view of his condition.

THE SCOTTISH TRIAL OFFICIAL RESULTS.

LONDON, August 6.—The results of the Scottish Trial have just been made public. This reliability contest, it will be remembered, was held in June over a 700 mile course of mountainous country, and without doubt the test was most severe.

In the class for cars costing under $1,000, the gold medal was gained by the 9-horsepower Swift car. The 10-horsepower Cadillac, which was the only car in this class to lose not a single mark for reliability out of the 800 total, was classed third, the system of general classification embracing fuel consumption and hill climbing powers as well as reliability. The 8-horsepower Maxwell gained fifth position. The Swift is credited with running 36 miles on a gallon of gasoline, and the Cadillac 26.2 miles per gallon.

The second class had a price limit of $1,750, and first award was made to an Arrol-Johnston car of 15 horsepower. This car had 28.4 miles to its credit per gallon, but the second car, a 10-horsepower Darracq, surpassed this performance by running 38.1 miles to the gallon. The Darracq was awarded the Scottish Cup for lowest fuel consumption, this being equivalent to 41.7 ton miles per gallon. In this class the 16-horsepower Reo was placed sixth and the 16-horsepower Maxwell tenth. The Reo gained third place in the hill-climbs. There were no American cars in the remaining classes, which were headed by a 16-horsepower Wilson-Pilcher, 30-32 Darracq, and a 25-36 Brasier, respectively. The Brasier had the creditable record of 17.6 miles per gallon of gasoline.

In the Trial, only 13 cars failed out of the total of 79 competing. Twenty-three cars gained full marks for reliability, and seven others had but one minute's stop recorded against them.

MASSACHUSETTS LAW CAUSING TROUBLE.

BOSTON, Aug. 13.—A section in the new automobile law that was enacted this spring and that was designed to be a protection for automobilists who were held up and compelled to give information to the police, is proving to be anything but a protection and is more of a boomerang. It was brought up in court this week for the first time, and if the other judges follow the precedent established by Judge Berry, of the Lynn district court, in construing the section, many automobilists are sure to land behind the bars and have to call on their friends to secure bail before they can go free. The section is as follows:

"Any person owning or controlling a motor vehicle who, when requested by a police officer, shall refuse or neglect to give any information within his power to give which may lead to the identification or apprehension of the person who was driving such motor vehicle on the occasion inquired about, shall be punished by a fine of not less than twenty-five nor more than one hundred dollars; provided, that no evidence obtained under the provisions of this section shall be used in any criminal proceeding against the person furnishing the same."

The proviso is what caused the trouble. A man by the name of Stanley was held up in Lynn and he was asked the usual questions concerning his machine, registration, license, etc., by the police, and later was summoned to court. When the case came to trial the attorney for the defense quoted the section given above and argued that his client could not be held, as he had given the police the information they were using against him. The judge held the point well taken and discharged the defendant, placing his case on file.

The Lynn police, thereupon, were ordered not to ask questions of automobilists they found exceeding the speed law, but to bring them to the police station and keep them there until they were tried or bailed. The police will secure their information from other sources. Since this case came up, Police Commissioner O'Meara, who is conducting a campaign for the sane enforcement of the automobile law in Boston, has issued a statement that, if one automobilist takes advantage of the section of the law above quoted, he will be alone, for in every subsequent case the police officers will arrest the person charged with overspeeding and take him to the police station as they would a burglar.

It is very apparent that if such a policy is carried out in Boston, other cities will follow suit, much to the inconvenience of automobilists, who may be arrested in places where it will be hard to secure bail quickly. Heretofore it has been almost the universal custom of the police in eastern Massachusetts to stop overspeeding automobilists, secure from them their names and such other information as was required, and later summons them to court. A visit to the police station was not usually necessary and no arrests were made except in extreme cases.

WILL TEST N. J. COMMISSIONER'S RULING.

TRENTON, N. J., Aug. 13.—Commissioner of Motor Vehicles J. B. R. Smith, of New Jersey, finally has revoked license No. 8795, issued to Joseph Brady, who was chauffeur for Gerrish H. Miliken, a prominent Hudson county automobilist. This is the second time that Brady's license has been revoked, and he is now going to ask for an investigation to ascertain if Mr. Smith has the authority to revoke this license and to test the validity and the constitutionality of the Frelinghuysen act. The commissioner, however, says that he acts under the direct instructions of the attorney general of the state, and will fight the question to the end.

Many owners of automobiles have had to pay heavily for alleged violations of the new law of Kansas, which requires automobiles to give the entire right of way to horses on the highways. On meeting horses the automobile must come to a full stop, and the driver do everything in his power to avert runaways. This last provision is capable of varied interpretations.

HOW ONTARIO'S LAW WILL BE APPLIED.

TORONTO, ONT., Aug. 13.—The text of the official instructions sent out by the Ontario government to the six special constables who were appointed to assist in enforcing the new automobile law shows that the government is taking a liberal view of the automobile. While certain sections of the law will be enforced strictly, others which were the result of the efforts of some of the more violent anti-motorists in the house, will be enforced with "considerable judgment," as the Provincial Secretary puts it. Thomas J. Mulvey, assistant provincial secretary, told your correspondent that the instructions were to the following effect:

"In view of the strong feeling regarding the regulations which exist in some parts of the country it is desired that considerable judgment and discretion be exercised in enforcing the regulations. It is recognized that the operation of automobiles will increase largely in the future, and that when the rural community becomes more familiar with them the dangers which are at present encountered will pass away. It is also recognized that there are many automobilists who strive conscientiously to conform with the regulations and to avoil accidents, but there are others who seem to have no regard whatever for the rights of others on highways.

Persons operating automobiles without permits or tags, or those who do not observe the regulations when accidents happen, are to be severely dealt with. Automobilists who run at a rapid rate through villages without regard to the traffic deserve very little consideration. The same applies to automobilists who willfully allow dust and dirt to accumulate on their markers so that they may not be recognized. If the tail lamp should accidentally go out, it is not necessary that there should be a prosecution. If the lamp and tag are properly placed as provided by the regulations so that the lamp can illuminate the tag, there should be no prosecution, but the automobilist should be warned, and upon receiving such warning must immediately relight the lamp to comply with the law's requirements.

Considerable difficulty has arisen in the department through failure to report transfer of vehicles. The constables are advised to see in every case that the owner of the automobile is the person shown on the list sent to them. If the names do not correspond they are to notify the department at once, and also notify the owner that the transfer should be reported. If, after the warning, he does not comply with the regulations, he should be prosecuted. The constables are to report to the department each week.

ANOTHER CASE OF MR. QUINN OF LEICESTER

WORCESTER, MASS., Aug. 13.—A case that has occasioned considerable speculation as to the disposal of cases of like nature in the future and which lawyers here believe will become a precedent is that of Dr. J. N. Luning, 36 West 35th street, New York City. On Friday of two weeks ago Dr. Luning was said to have exceeded the speed laws of Leicester by Chief of Police James A. Quinn. He was summoned to appear in court here on Thursday of last week after posting his $50 bail bond. When his case was called on Thursday a young man from the office of Lawyer Charles M. Thayer stood up and pleaded guilty for Dr. Luning, who was not in court. Judge Hollis W. Cobb was on the bench, and he was to all appearances quite taken back by the young man's plea. As the defendants in criminal actions are required to be in court to plead he said Dr. Luning should be present in person, whether it put him to considerable trouble or not to come on here from New York, as that was one of the penalties of breaking the law. He inquired if the young man would willingly accept a jail sentence if he did not see fit to impose a fine. The young had announced his willingness to pay a fine, but when jail was mentioned he quickly lost his enthusiasm. Finally however Judge Cobb imposed a fine of $15 on Dr. Luning by proxy. Neither Quinn nor any of his officers were in court to offer any evidence to the effect that Dr. Luning had exceeded the speed limits of the famous hill town.

ANOTHER TRANSCONTINENTAL TRIP

Richard H. Little and Christian D. Hagerty, two well-known Chicago newspaper men who have gained considerable fame as war correspondents, started this morning from New York City, headed for San Francisco, their method of transportation being a two-cylinder Buick, which is scheduled to make the trip in

DRIVER DE VAUX AND CORRESPONDENTS LITTLE AND HAGERTY.

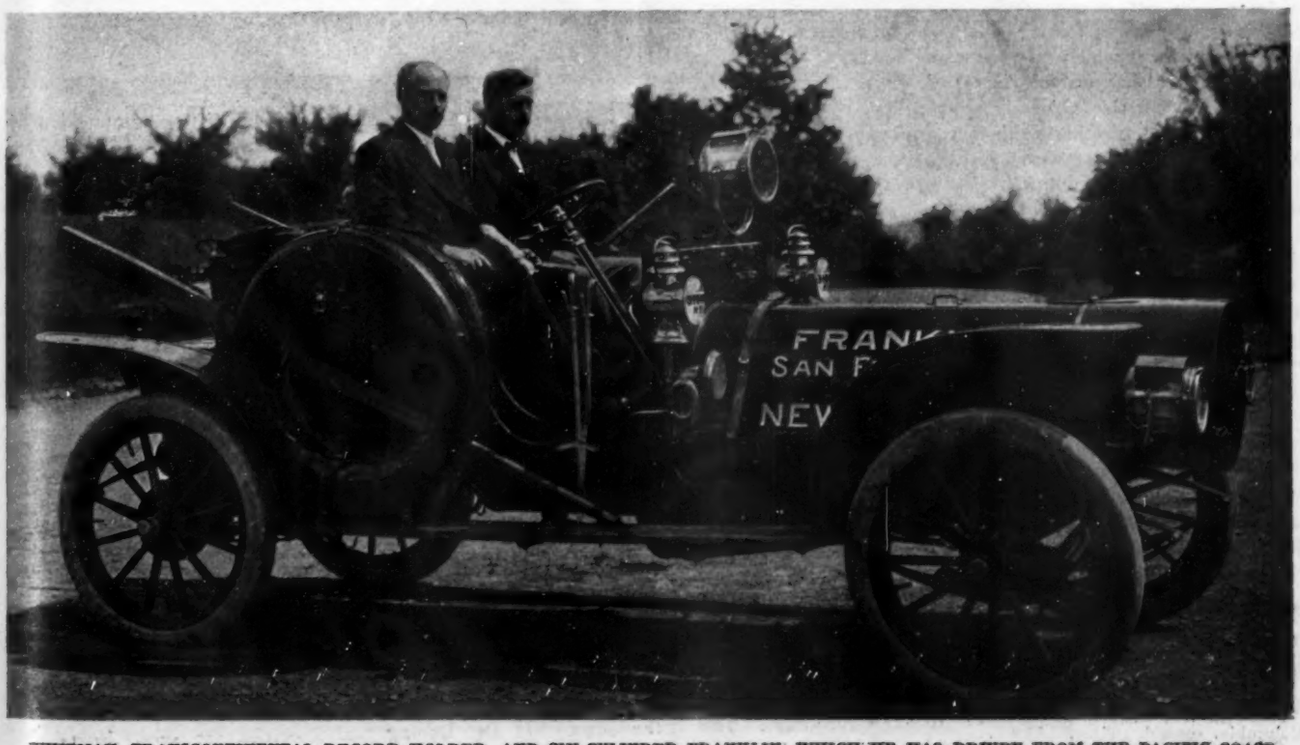
three weeks. Along with the newspaper pair will be three drivers, who will alternate at the wheel of the 22-horsepower car. These are Norman De Vaux, J. R. Whipple and Charles Stevens. The drivers will work in pairs, the third man hurrying ahead by rail. The newspaper correspondents are not expected to sleep, and in some manner their trip is related to the desire of Yuan Shai Kai, a viceroy of Chili province in China, to learn something direct from the correspondents, with whom he became acquainted when they were in his country, as to the ability of a moderate-priced automobile to reduce distances.

WHITMAN FAR AHEAD OF RECORD.

CHICAGO, August 13.—After a thirteen-days' wild chase across that portion of the continent which lies between here and San Francisco, Whitman to-day brought his six-cylinder Franklin into this city, far ahead of the transcontinental record of 1904. Difficulties many and great were encountered. The 7,000-foot elevation of the Sierra Nevada mountains was climbed in little more than the time required by the Overland Limited. Six hundred miles of desert, extending from the foot of the mountains to the Great Salt Lake, were covered at the rate of eleven miles an hour, though half a day was lost in dragging the car out of the quicksands of the Humboldt Sink. Ogden was reached in four days—six days better than the 1904 mark. Through Wyoming Whitman encountered rain and mud, swollen streams that had to be forded, and irrigating ditches. The block and tackle was often in requisition to haul the car from the soft, sticky beds of the streams. Six hours of hard labor were needed to get the car out of the Green river, in which it was nearly submerged, and between Rawline and Cheyenne another quicksand mishap caused a delay of eight hours. From Ogden, with an elevation of 4,300 feet, the car climbed to Sherman, at 8,000 feet—the Rocky Mountain Divide and the highest point reached by the tourists. Nebraska was rainy and muddy, and caused a good deal of delay, but when Omaha was reached, nine days after leaving San Francisco, Whitman was eleven days ahead of the 1904 record.

Whitman Expected to Arrive in New York To-day.

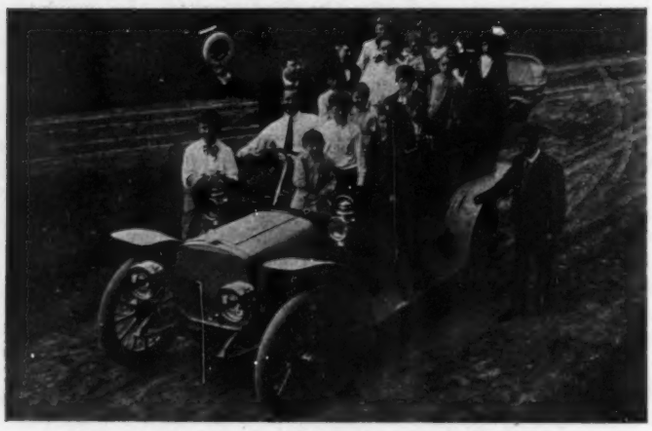
NEW YORK, August 16.—The latest news received concerning Whitman was that he left Chicago at 10 o'clock Monday night, passed through Toledo at noon on Tuesday, and reached Syracuse Wednesday afternoon. The concluding part of his schedule is expected to bring him into New York sometime this morning, possibly before noon. This would make his total time something over thirteen and one-half days. Whitman's previous record across the continent was 32 days, 23 hours and 20 minutes, made in a 10-horsepower Franklin, August, 1904. The performance of the six-cylinder is something remarkable, and the advocates of the air-cooled car will naturally be pleased with the excellent showing made and the big cut in the record.



WHITMAN, TRANSCONTINENTAL RECORD HOLDER, AND SIX-CYLINDER FRANKLIN, WHICH HE HAS DRIVEN FROM THE PACIFIC COAST.

MR. LOZIER ENTERTAINS THE YOUNGSTERS.

However much the grown-up people may enjoy their automobiling, it is not likely that they extract as much real, solid fun out of a spin as do the children when they get their innings. It needs but a casual glance at the accompanying engraving to see that the swarming youngsters are having the time of their lives, and if there is anyone who seems to be in better spirits



A FULL CARLOAD OF URCHINS FOR THE LOZIER.

than the "kids" it is E. R. Lozier, who is barely able to maintain his position behind the wheel in the face of the jolly crowd he has on board. On the running-board, waving his hat, is Charles M. Murphy, of New York.

The car is a 40-horsepower Lozier—the same car that E. R. Lozier drove through the Glidden Tour with a loss of but 13 points, of which 7 were caused by a blockade on the last day, five were earned by helping a fellow-tourist out of a ditch and one was the result of a tire punncture which caused a loss of 29 minutes, of which 28 minutes were made up.

A LONG TRIP FOR TWO-TON TRUCK.

KANSAS CITY, Mo., Aug. 13.—The Kansas City Motor Car Company will, on August 15, endeavor to make the longest distance trip for a commercial wagon of two tons carrying capacity, and for the further purpose of demonstrating that the type of equipment which they are manufacturing is adequate and capable of operating over all classes of roads.

George K. Wheeler, General Manager, and O. J. E. Caps, with two chauffeurs, together with newspaper representatives, will leave Buffalo with a two-ton truck and a 50-horsepower tourabout, drive them from Buffalo to Utica, Syracuse, Schenectady, and New York City; from New York City to New Haven, Hartford, Springfield, and Worcester to Boston. It is expected that Boston will be reached August 22, with one day spent in New York. The entire distance will be about 850 miles. The attention of the government has been drawn to this long distance test, to show to it the practicability of motor equipment for long distance marches.

OLDFIELD DEFEATED BALD AT PIMLICO

BALTIMORE, August 11.—Mechanical trouble put Eddie Bald's "White Streak" out of the running for the Monumental Sweepstakes at Pimlico, and over 6,000 people saw Barney Oldfield capture the money. Bald led to the fourth mile. He had defeated Howard W. Gill, in a Stanley steamer, in the first heat of the Sweepstakes. Summaries:

$1,250 or under class (3 miles)—A. Kershaw, Buick, won; Whipple, Buick, second. Time, 4.53 2-5.

Five-mile motorcycle—E. Mangold, Indian, won; R. Thomas, Indian, second. Time, 7.54 3-5.

$3,000 and under class (5 miles)—A. Norwood, Lambert, won; Roland Morgan, Stevens, second. Time, 7.22 2-5.

Monumental Sweepstakes—First heat, Edie Bald defeated H. Gill; second heat, Oldfield defeated Bald. Best mile by Bald, in 1.06.

$300 and over class (3 miles)—A. S. Zell, Thomas, won; F. Hurst, Columbia, second. Time, 3.53 2-5.

Fifty miles, fully equipped touring cars—Zell won, Hurst second. Time, 66.38.

RIGID ENFORCEMENT OF NEW JERSEY LAW.

PHILADELPHIA, August 13.—Local automobilists bound Atlantic Cityward last week ran up against a new snag. At Elwood, midway between Hammonton and Egg Harbor City, the town officials have rigged up a chain boom, which, on a signal from up or down the road, is stretched across the road to head off cars which in the opinion of the officials may be moving too fast. Many who were well within the limit were stopped, some of whom were fined, if the magistrate's inner consciousness moved him in that direction, others being let off with a reprimand, a warning "not to do it again." Atlantic City bonifaces are claiming that the constant nagging of the automobilists is keeping them away from the resort. Certain it is that the new law is being enforced with an attention to detail that is exasperating, to say the least.

NEW FACTORY FOR OSCAR LEAR CO.

COLUMBUS, O., Aug. 11.—Before snow flies the Oscar Lear Automobile Company hopes to be in a new plant, which will enable it to double its present capacity. The company was negotiating with Zanesville business men to locate there, but the refusal of the local banks to finance the project resulted in the deal being declared off, and so the company will remain in Columbus. The present plant is located in the business heart of the city and is too valuable for manufacturing purposes.

President Lear says that next year the company will turn out a new car, larger, more powerful and faster than the one now made. It will have about 40 horsepower and will seat from five to seven persons, adjustable to either number.

RACES FOR THE EMPIRE CITY TRACK.

A thousand-mile race for fully-equipped touring cars will be the leading feature of a race meet to be held at the Empire City track, Yonkers, N. Y., on August 24 and 25. William Pickens is the promoter, and he has applied for a sanction and has secured the track for his meet. It is proposed to oil the track to keep down the dust, and to illuminate the way at night, when the thousand-mile contest will be under way, with the same system that was used at this track when Vaughan made his twenty-four-hour record in July, 1905. A number of prominent racing men have declared their intention of entering the contests.

MR. SCARRITT'S TWENTY-THIRD AUTO.

Winthrop E. Scarritt, former president of the Automobile Club of America and of the American Automobile Association, and an automobilist of long standing and wide experience, has purchased a Frayer-Miller air-cooled touring car of 24 horsepower. Mr. Scarritt has owned twenty-three cars of various types, and is an expert driver in all the term implies.

W. E. SCARRITT IN HIS NEW 24-H.P. FRAYER-MILLER.

WHY SOME AUTOMOBILES ARE EXPENSIVE

By H. F. DONALDSON.

MANY persons contemplating the purchase of a car are at a loss to understand why some machines cost two or three times the price of others of the same power or load-carrying capacity. Even a casual inspection of different cars may not disclose any good reason why, for the exterior lines and the finish may present no very striking contrasts. Nowadays it is by no means necessary that one should pay a high price to get a good car, for no maker of reputation would sell a car at any price that was not value received. Yet for exactly the same reason no builder who expected to stay in business would put a price on his product that was extortionate, or that could not be defended when a critical examination of a car had been made by an expert. Indeed, it is becoming more and more the practice for the inexpert purchaser to seek expert advice when the purchase of an expensive "fine automobile" is contemplated.

A fair comparison can be made between the differences in cost and value of cars and the differences between the prices of clothes. One purchaser will buy a good, serviceable business suit for, say, $20 that will be entirely satisfactory to him in fit and wearing qualities, while at the other extreme another buyer will pay $80 for the same *quantity* of cloth, and be equally satisfied with his investment. There will be differences in the quality of the materials used, not, perhaps, sufficient to account for the great difference in price, but there will also be differences in the way the materials are fashioned and put together, especially in linings and places that do not show, and it is these differences that count in the long run. They represent an expenditure of time and skill that greatly increases production costs, and that in all things manufactured, whether in textiles or metals, make the comparative differences between good, better and best.

In all ages there has been a class of persons who demand the best, and in the automobile field to-day this class is a growing one. The number of expensive cars built and sold on this side of the Atlantic has increased enormously, and there are several builders now in this country who devote their entire works to the output of cars of the highest class.

The builder of the fine automobile must have an "infinite capacity for taking pains," and, to discover for the reader the results, the writer, accompanied by THE AUTOMOBILE photographer, paid a recent visit to the plant where the Smith & Mabley "Simplex" is created. This plant is one of the few engaged in the construction of automobiles in the metropolitan district of New York. Located "away over on the east side" in Manhattan, it is probably seen oftener by automobilists from the deck of a Long Island Sound steamer than from the street, for the eastern walls mark the wharf line at the foot of Eighty-third street and the East river. The location in the quiet of an east side residential neighborhood is understood when one recalls that the plant is as famous for autoboat motors as for automobiles. But to the results.

The assembling room is perhaps the best place in an automobile plant to get impressions. It is the exhibition hall, as it were, in which the genius of the drafting room and shops is on view. A few paces from the door, in the plant visited, a complete motor caught the eye. The photographer opened his shutter, and the result is now labeled Fig. 1. One does not need to be an expert to appreciate the refinement of workmanship which this picture suggests—the beauty of the proportions, the sense of everything suited to its functions and in its proper place, and the symmetry of line and contour. Attention to detail is shown in such little

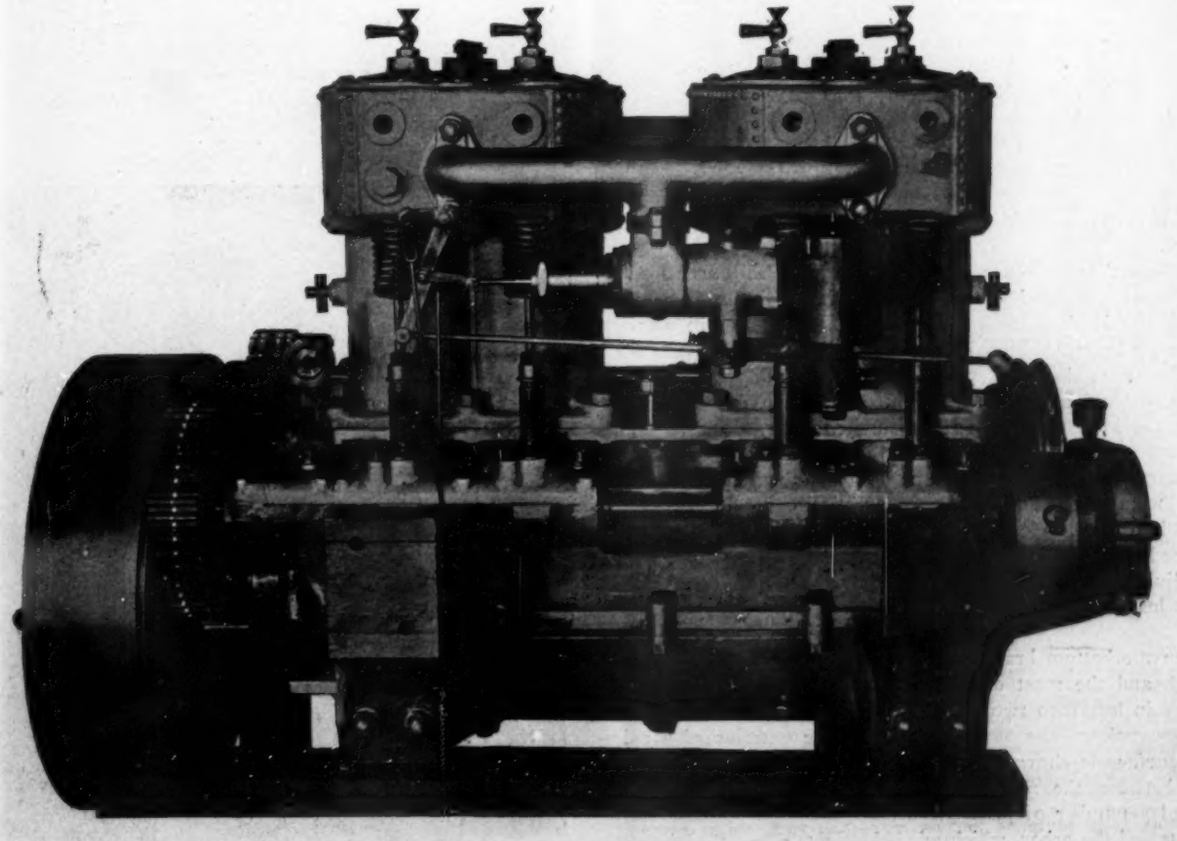


FIG. 1.—FOUR-CYLINDER MOTOR OF S. & M. SIMPLEX CAR READY FOR FITTING IN FRAME

things as the uniformity of length of tap screws and the accurately fitted and pinned joints in the governor and throttle linkage.

And it is simply part of a stock machine on which one came by chance.

Yet, good as the motor might be to look at, the comparison with the suit of clothes suggested a scrutiny of the parts hidden from view. Down in the vitals of the motor the crank shaft bearings will be a good point to investigate.

FIG. 2.—SCRAPING A MAIN BEARING.

Again the camera clicked, and a skilled workman was caught in the act of "scraping" one of the base bearings of a crank shaft—Fig. 2. The scraper is simply a half-round file, ground to a smooth-cutting edge; a very ordinary tool in appearance, yet one requiring a very high degree of skill in its use, for a good eye, a steady hand, a capacity for reasoning from effect to cause, and unlimited patience, are the principal requisites in the use of the scraper, the purpose of which is to produce a true surface—concave or flat.

Convex, or rather cylindrical surfaces, can be trued up in a machine by grinding either with an emery wheel or a lead lap fed with some abrasive substance. In the fitting of the crank shaft both these methods are employed. The pins and journals of the crank shaft are ground so that the contour at every point in the journals is a true circle, and exact parallelism of the axes is insured. The brasses, which are really not brass at all, but phosphor bronze lined with babbitt metal, are bored out true in their seats, so that when machining is finished they are exactly in line; yet their interior surfaces, if examined under a strong magnifying glass, would show an irregular succession of hills and hollows.

It is here that the scraper comes into use. The journals of the crank shaft are lightly coated with coloring matter—blue paint is used in this shop—and the shaft is carefully laid in place on the bottom brasses. The shaft is rotated by hand back and forth and lifted out; the high spots in the brass with which the true surface of the journal has come in contact are colored, while, of course, the low spots show no change of color. Then the high spots are scraped down, as shown in Fig. 2.

This operation is repeated time and again until, at last, each brass shows a good contact over practically its entire surface. It can be easily understood that when the parts are originally machined down to within thousandths of an inch, only an infinitesimally small amount of metal can be removed at each scraping, or the last condition of the bearing would be worse than the first.

When the bottom brasses are finished the top ones have to be scraped, and the most expert mechanic cannot finish the three bearings in less than two days' time.

An example of the method of truing the exterior of a cylindrical surface is shown in Fig. 3. The barrel-shaped object in front, between the machine centers, is an arbor on which is mounted a number of piston rings, pressed together endwise by the plates of the arbor, which are held tight by a nut and screw. Back of the arbor the grinding wheel can be seen with the hood and water pipe connection on top, as the work is ground wet. This wheel, running at several thousand revolutions a minute, is brought into contact with the outside surface of the rings, which are also rotated, and by a lateral motion the grinding wheel passes over the entire surface of the rings. Before the rings are put in this machine they seem to be sufficiently finished, but, when closely examined, the marks of the cutting tool by which they were turned out of a cast-iron bowel, can be seen in little ridges, each about two-thousandths of an inch in depth. In the grinding these ridges disappear, and the rings take on a mirror finish and are trued to a diameter with a fractional accuracy represented by three places of decimals.

The width of the piston ring, which determines the accuracy of fit in the groove in the piston, is also fractionally determined by grinding, an operation shown in Fig. 4. The ring is seen in the machine, lying flat on a circular table, to which it is held by magnetic attraction. At right angles to the table is the emery wheel, its grinding edge in contact with the ring. A graduated wheel below regulates the elevation of the ring, and so the amount of metal removed—which is almost imperceptible—and the table slowly revolving passes the entire edge of the ring under the grinding wheel.

When thinking of grinding one is apt to form a mental picture of the itinerant knife-sharpener of the streets. His object is to produce a condition—the automobile grinder's to produce a dimension. That is the fundamental difference.

The foregoing are merely examples of the general methods employed in the building of the motor and gear box, and, in fact, the entire automobile power plant. It would require unlimited space to record all the little refinements in the machining and finishing of the components. But they are all needed to produce a "fine automobile." Every wearing surface must be true, every bearing and joint a fit.

When a crank shaft is finished in the way here described, it is a fit in the proper meaning of that technical term. No shims or liners are used. There is no provision for any adjustment, because no adjustment is needed. The surfaces are true before the motor is started; there is no chance for lost motion, and, assuming that the proportions in design are correct, that the materials are without flaw, and that proper lubrication is assured, the bearings should wear indefinitely—theoretically. In practice, of course, they wear out in time. It is a comparatively trifling matter, however, to review a bearing before wear has impaired the mechanical efficiency of the engine.

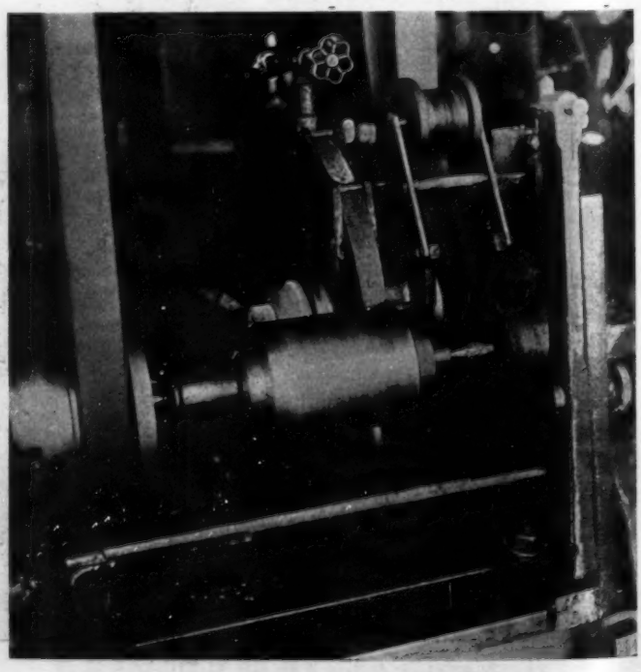


FIG. 3.—GRINDING CIRCUMFERENCE OF PISTON RINGS.

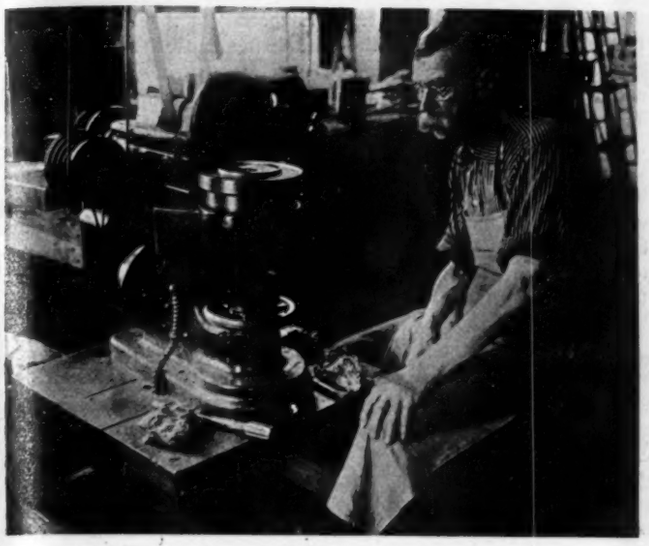


FIG. 4.—GRINDING EDGE OF PISTON RING.

FIG. 5.—PRESSING WRIST PIN IN PLACE.

In assembling the power plant, after all fitting is completed, the same care that has been used in machining must be taken or there would be a break in the continuity of purpose to produce a fine automobile. There would not be much use in machining parts to three places of decimals and then using a hammer and file to assemble them.

A detail of assembling methods appears in Fig. 5. It shows a special apparatus for pressing wrist pins into place. A hammer and a block of wood would get the pin into place, but in driving it home something might be sprung—a connecting rod, for instance—and one of those trifling causes of subsequent trouble created then and there. As the photograph shows, the frame of the apparatus encircles the piston, and the pin is laid in the trough-shaped extension (on the left) in front of the screw, which is operated by the handwheel on the end, and which gently forces the pin into the bosses in the piston. There is no possibility of strain on the connecting rod or of distortion of the piston, which is supported circumferentially at the point where the pressure is applied.

In response to an inquiry, I learned that all the bolts and screws used in the plant are made there, so that both the quality of the materials and the accuracy of the dimensions are under the direct control of the engineering staff.

A detail of a somewhat similar character, that caught the eye, was the forging of motor valves in the blacksmith's shop. Fig. 6 is a snapshot the photographer made during the process of heading a valve. The valves are drawn down out of solid stock (round steel), the end for the mushroom being left much larger than the stem. This is done in one heat. In forming the head, the forging is reheated, and the stem is inserted in a hole in the die seen on the block under the steam hammer. This hammer in a few powerful blows forces the large end of the forging into the upper end of the die and gives it the proper shape. In the operation the metal is compressed in the head, and a very tough and durable valve is secured. When forged, the valve is considerably larger than the finished size and about a pound weight of metal is machined off, so that a perfect surface is assured. In the view there are two forged valves on the left. It is an expensive method, but it accomplishes the required results.

The same idea is shown in the making of the frames in this shop. These are formed by hand out of high-tensile flat steel, and when finished make a surprisingly neat job, though, of course, an expensive one. Fig. 7 shows the operation of making a frame. The workmen are posed in this illustration, as the photographic conditions in the shop made it impossible to secure a picture otherwise. It will be seen that the steel plate is secured on a cast-iron former, which is the exact shape of the finished frame. The plate is previously heated in a gas furnace, not visible in the photograph, and it is flanged by the workmen with wooden mallets. Afterwards it is smoothed over with smith's tools and the lines faired, and, lastly, the edges are finished off in a planer.

Other parts of the runnig gear show a disregard for the conventional, and an intention to get results, even if the process is slow or laborious. A good example is illustrated in Fig. 8, which shows a rear axle in a lathe for finishing the ends. The axles are made of chrome steel in one piece, without welds, the original forging being delivered at the shop just a trifle shorter than the finished length. The axe is lengthened to template in the shop forge and is then turned up in the lathe.

FIG. 6.—FORGING VALVES UNDER STEAM HAMMER.

FIG. 7.—SHAPING FRAMES BY HAND.

This latter is a more difficult operation than one would first suppose, for the reason that the axle ends are not in the same

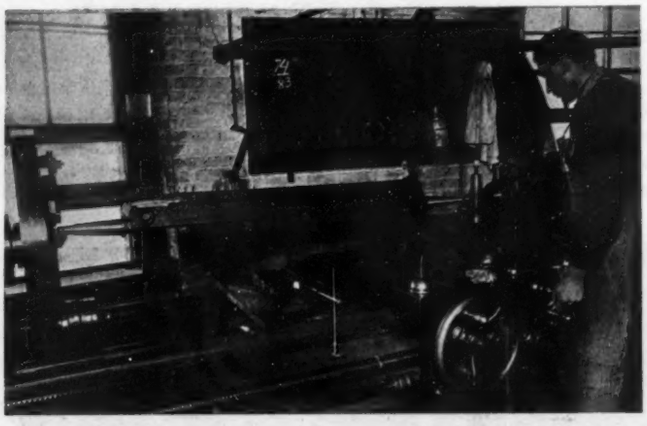


FIG. 8.—TURNING ENDS OF CHROME STEEL AXLE.

horizontal plane. They are offset just enough to give the proper rake to the rear wheels, and consequently the axle cannot be put

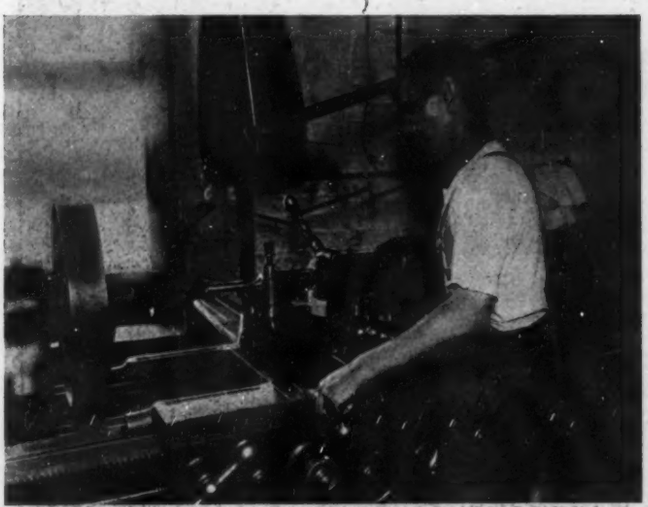


FIG. 9.—MACHINING SOLID STEERING FORK.

in the lathe on its own centers. A special jig is clamped to the face plate of the lathe and the head center end of the axle is set eccentric, while the lathe dead center is concentric with the other end of the axle—where the cut is being made in the picture. Time and care are required, and they are both costly.

Fig. 9 is a view of an adjoining lathe, in which the irregular-shaped steering fork is being turned. It is an awkward piece to handle, but there is no help for that if the part is to be made without welds, and there are no welds in the steering gear of the completed car. In turning the pin its geometrical position in relation to the boss for the connecting rod pin and the other (ball) end of the fork have to be considered, so that when the complete gear is assembled it will not stick or bind.

Some of the methods described are peculiar to this shop, and some are in use wherever the best possible work is done. In either case they serve as good illustrations of the reason why some modern machines cost a comparatively large sum of money. Work of the kind takes a car out of the ordinary class of machine-shop productions, and really gives it rank with the output of those special establishments in which instruments are made. The highest class automobiles on the market to-day contain much work that is as accurately performed as the work one expects to find in great telescopes, for example.

In connection with this little study the writer wishes to express appreciation of the courtesies extended by the works management in permitting free inquiry and investigation during an unexpected visit.

WHAT MICHELIN SAYS OF PINCHED TUBES.

"In our repair department, in Clermont-Ferrand," said A. Michelin, the well-known tire manufacturer, to the Paris correspondent of THE AUTOMOBILE, recently, "we receive regularly a great number of air-chambers (inner tubes) which have only been used a short time and are returned to us with a longitudinal tearing. The cause of that tearing is very easy to recognize. The air chamber has been pinched by a careless person during the operation of mounting the tire. The 'pinch' is an accident, generally occasioned when the automobilist is trying to place the second cushion inside the rim. The air chamber gets pinched to a more or less considerable length, and determines a corresponding cut, which it is almost always impossible to repair on the road. Then the tube is forwarded to the factory, where a 'muff,' of a length equal to the wounded part, is fitted. The pinch is considered as an onerous accident, however; there is nothing easier than to avoid it.

"There are three different sorts of pinches. The first forms itself between the shoe cushion and the bottom of the rim. It occurs generally when the operator puts into place the last part of the cushion and the tube is not sufficiently inflated. The second sort of pinch is formed by the introduction of a part of the air chamber under the head of one—or several—of the safety bolts. The third, which does not occur frequently, consists of a fold formed by the air chamber near the valve, and maintained in this position by the valve itself.

"It is easy to understand that when the tube is pinched the air pressure acts only upon the pure rubber from which it is made, and there is no resisting side on which the tube can rest and keep its normal form. Necessarily, the pressure causes the tube to burst. This bursting does not happen suddenly, as a rule. It occurs, on the contrary, after a certain period of time, during which the rubber has attained its elastic limit. Consequently, you will understand also that such a bursting can occur, either when the car is going at top speed or when it is at a standstill. If the pinch has been made for a considerable length, it will sometimes happen that a part of the shoe cushion jumps outside the rim edge, and then the burst is very noisy. If the pinch is small there will only be a slight whistling, followed by the flattening of the shoe."

HOW THE BEVEL GEAR DIFFERENTIAL WORKS

WHEN an automobile turns a corner or rounds a curve the wheels on the inside of the curve describe an arc of smaller radius than the arc described by the outer wheels; the outside wheels therefore have to move through a greater distance than the inside wheels, though in the same time. It is obvious that the only way in which the outer wheels can move a greater distance than the inner wheels, in the same time, is by moving faster. In the case of the front wheels, each wheel runs independently of the other and can accommodate itself to the conditions. In the usual type of gasoline car the rear wheels are connected with one source of driving power, and the differential or equalizing gear is employed to drive both rear wheels at the same time, distributing the power equally to both while permitting the wheels to rotate at different relative speeds. If both wheels were rigidly secured to a solid axle and the axle driven from the usually mounted on the axle which it drives; the gears are enclosed in a housing on the axle which, at the same time, affords a support for the parts within it. In the case of a car having each rear wheel running on a dead or non-rotating axle and driven by a chain, the group of gears is mounted on a countershaft usually carried by the change speed gearcase, the outer ends of the countershaft carrying sprockets from which chains run to sprockets on the rear wheels.

The bevel gear type of differential is the easiest to understand, and for this reason will be explained first. It will be well for the reader to divest himself of the idea that the differential is a fearfully and wonderfully complicated piece of mechanism, for it is not, though the multiplicity of parts and the confusing appearance, to a non-technical person, of a working drawing, is apt to make it seem anything but easy to comprehend.

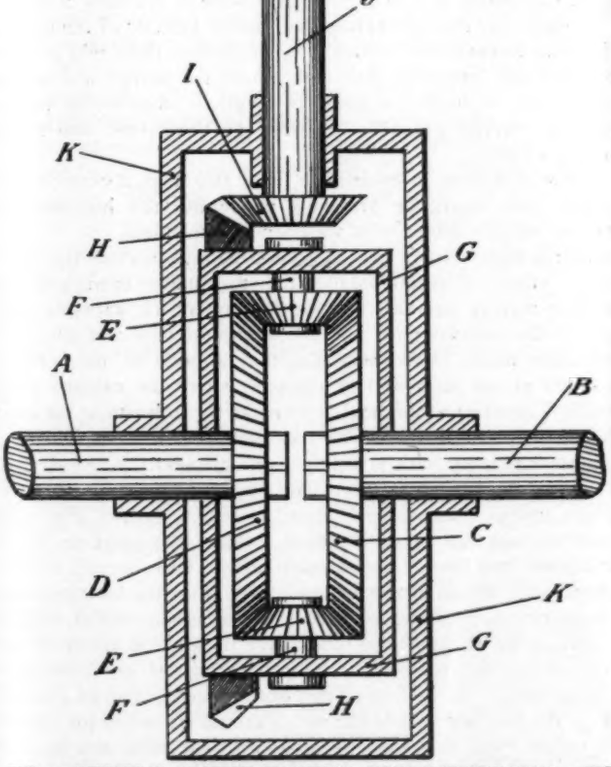


FIG. 1.—VERTICAL SECTION OF BEVEL GEAR DIFFERENTIAL.

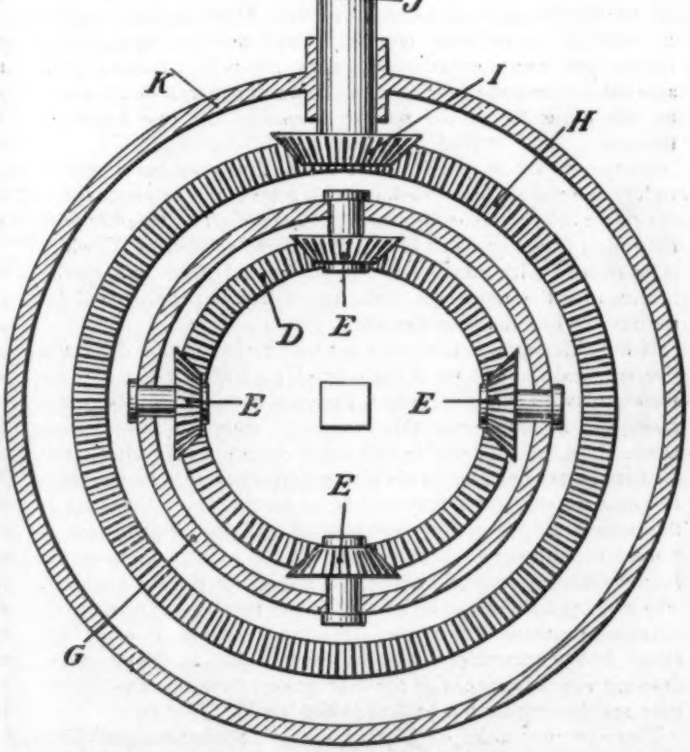


FIG. 2.—PART OF DIFFERENTIAL SHOWING ARRANGEMENT OF BEVEL PINIONS.

motor, it would, of course, be impossible for the wheels to rotate at different relative speeds, and when turning a corner one or both would be forced to drag on the road, to the damage of the tires and waste of power.

The differentials in common use are of two broad types—the bevel gear type, in which the distribution of power and the relative rotative motion of the road wheels are effected through bevel gears; and the spur gear type, in which spur gears and pinions are employed for the same purpose. The essential principles involved are the same in both cases, though the practical application differs somewhat.

Broadly speaking, the differential consists of a group of gears and pinions through which the two road wheels are connected with the source of power. In the case of a car in which the power is transmitted to a live rear axle of the ordinary type through a single chain or a propeller shaft, the group of gears and pinions is

In the typical bevel gear differential, shown diagrammatically in Figs. 1 and 2, the rear axle is divided into two parts, *A* and *B*, and these two halves, or shafts as they are called when referred to individually, are driven simultaneously by the propeller shaft *J* through bevel gears. An axle of this type is usually called a "live" axle, because it rotates and transmits the driving power; a "dead" axle is one which, like the front axle, is stationary, the wheels running on bearings on the axle ends and being driven by chains or their equivalent. The duty of the differential is to transmit the driving power equally to both wheels, through the halves of the live axle, and to maintain the balance—deliver the same power to each shaft—whether they are running at the same speed or at relatively different speeds.

On the squared inner ends of the shafts *A* and *B* are mounted two bevel gears *C* and *D*. Four bevel pinions, two of which are shown in Fig. 1 and all four in Fig. 2, all marked *E*, are placed at

equal intervals, each pinion meshing with both gears at the same time. These pinions are carried on studs marked *F*, projecting inward from and rigidly secured to the rotating casing *G*. The pinions are free to rotate on their studs in either direction—a point which should be remembered in following the working of the gear. It may be mentioned in passing that the number of pinions used is not necessarily four. The number used varies from two to as many as can be got in, but four pinions are very often employed in bevel gear differentials.

For the sake of simplicity, let us suppose for the moment that this is all there is to the gear. The two halves of the axle *A B* are free to rotate. If the casing *G* is rotated by hand, it will, of course, carry with it the pinions *E*, and the pinions, meshing with the gears *C D*, carry them around and with them the two halves of the divided axle and the road wheels. The pinions *E* are free to turn on their studs, as has already been stated; but they do not now turn because the resistance is the same on both sides. If, however, the axle shaft *B* is held so it cannot rotate and the casing *G* is turned, the gear *D* will be driven at double the speed at which it revolved before, for the reason that pinions *E* not only rotate about the axis of the axle with the casing *G*, but they also rotate on their own axes, being forced to roll on the now stationary gear *C*, and this additional motion is imparted to gear *D* and its shaft and wheel. This is what would happen if the car could be turned with one rear wheel as a pivot. If the pressure applied to shaft *B* is sufficient only to retard but not stop it, the pinions will rotate on their own axes, but not as fast as if the axle shaft *B* and the gear *C* were stationary; therefore there will be less difference in the relative speeds of the two halves of the axle.

Driving power is applied to the casing through a bevel gear *H* rigidly secured to it and meshing with a bevel pinion *I* secured to the rear end of the propeller shaft *J*. All the gears, together with the casing *G*, are enclosed in an outer casing or housing *K*, which is stationary with relation to the shafts and gears and carries bearings for the inner ends of the two halves of the axle, and for the rear end of the propeller shaft.

If the differential is used on a car with a single chain drive and live rear axle of the usual type, bevel gear *H* is replaced by a sprocket and the chain passes through openings in the outer casing *K;* in some cases this houisng is merely a stout framework. In a car with double side chain drive the rear wheels run on a stationary or "dead" axle and are driven from a countershaft carrying sprockets and driven by bevel gears. The differential in this case is placed on the countershaft and the arrangement is similar to that shown in the drawings, the axle *A B* being the countershaft and carrying sprockets instead of the road wheels. The countershaft is usually carried at the rear end of the speed-changing gearcase, the driving gears and differential being enclosed in a rearward extension of the gearcase, as shown in the drawing which accompanied the description of the selective sliding gear speed-changing mechanism in the issue of July 19.

There are live axles of other types than the centrally divided one used for illustration, but the principle of the differential gear is not changed by the change of axle construction.

PARADOXICAL EFFECT OF MUFFLER.

In the design of prime movers, whether steam, gas, or gasoline engines, one very important point to keep in mind is the provision for allowing the motive fluid to escape freely from the cylinders after doing its work, either into the atmosphere or condenser, writes A. H. Gibson in *Cassier's Magazine*. The exhaust pipe for conveying the fluid should be short, so as to avoid friction losses as far as possible. This appears to be what one would naturally expect, and it therefore comes as rather a shock to be told that the addition of a muffler to the end of the exhaust pipe of a gasoline motor, in some cases, instead of increasing the back pressure, actually diminishes this, and enables the motor to develop a greater horsepower. The same thing happens in some cases if the exhaust pipe is simply lengthened.

To attempt to account for this paradoxical effect, it should be noted what happens when communication is made between a cylinder containing steam or hot gas under pressure and the atmosphere. The fluid rushes into the atmosphere, displacing a volume of the atmosphere equal to its own volume at atmospheric pressure, and in doing so performs work.

The sole object of a condenser in a steam engine, by the way, is to prevent the escaping steam from having to do work in displacing the atmosphere, and hence to leave more of its energy available for use on the engine piston. If in any way, then, we can reduce the work to be done in displacement of the atmosphere, we get a clear saving in energy which may be turned to useful account.

But the gases from a gasoline engine are rejected at a temperature of, say, 800 degrees F.=1,260 degrees absolute, and, if turned directly into the atmosphere, will do a certain amount of work by displacement. Suppose these gases are first passed through a cooler of some description—such as might well be supplied by a cool exhaust pipe, or muffler—so that their temperature is reduced to 630 degrees absolute=170 degrees F., before being turned into atmosphere. Their volume will be reduced to one-half that on leaving the cylinder—neglecting the difference in pressure—and consequently the volume of air displaced and the work done in this displacement will be one-half that done in previous cases.

The effect of thus increasing the exhaust pipe, or of the muffler, will be to increase the frictional losses, so that there will be some most suitable length of pipe with which the energy loss due to friction due to further increase in length is balanced by the increase in energy available for work on the piston, due to the cooling effect.

It would appear in connection with this that a water-cooled exhaust pipe might be profitably employed with high-pressure gasoline motors, along with water-cooled cylinders.

Several minor causes may also contribute to produce this paradoxical effect. It seems possible that the sudden opening to exhaust at regular intervals will set up a system of waves of pressure in the exhaust pipe, and the length of pipe and period of oscillation might be so arranged that a node of the wave is stationed at the inner end of the pipe where the exhaust valve opens. The effect of this will be to make the pressure at the other side of the exhaust valve less than that of the atmosphere, and to cause a reduced back pressure in the cylinder.

The column of gas in the exhaust pipe, too, when once set in motion, requires an applied force to retard it, and this force would be supplied by a difference between the pressure of the atmosphere and that at the exhaust valve. There is still another circumstance which, in special cases, may affect the back pressure. A mass of gas, projected suddenly from a circular orifice, such as the end of an exhaust pipe, may leave the pipe in either of two ways—either in the form of a vortex ring, or as a disturbed eddying mass. In each case the work done by the gas, simply due to the displacement of the air, is the same; but in the case of the vortex ring, this work is done with the minimum possible disturbance of the atmosphere, and hence with the minimum loss of energy due to eddy formation in the atmosphere.

It would appear that whether a vortex ring is produced or not depends largely on the velocity with which the gas leaves the pipe, and that, should the velocity exceed a certain value, the issuing motion will be turbulent. Cooling the gas, then, before its exit, and hence reducing its volume and velocity, will possibly change the motion from ordinary turbulence to ordered turbulence—the vortex ring—and thereby reduce the external work to be done by the gas.

These, then, are characteristics of the paradoxes which may be found in almost endless profusion by any careful observer in everyday practice. So many and varied are the unknown factors which vitally influence the behavior of any motive fluid, such as steam or gasoline vapor, whether during its production or its application, that perhaps in this field, more than in any other the paradox is specially rampant, and it behooves one to be wary in prognosticating the effect of any hitherto untried change.

LETTERS INTERESTING AND INSTRUCTIVE

The Difference Between Torque and Power.

Editor THE AUTOMOBILE:

[357.]—A friend of mine argues that the motor of his car pulls better at low speeds than at high, within the range of speed possible on the throttle, without changing gear. I claim that this cannot be so, because the faster an engine runs the more power it must develop. Who is right? WM. M. SAVIN.

Colby, Kan.

You are confused by the distinction between torque and power, and your friend is right. Torque is a term used to describe the turning power on a shaft, without regard to the rapidity of the shaft's rotation. Power is the product of complex factors, since it takes into account the time element as well as the torque. A certain pressure on the piston head in a gasoline engine produces a certain torque, without regard to the speed. Doubling the speed, while maintaining the pressure and consequent torque, will double the power, but if the pressure drops off slightly as a result of the increased speed, there is encountered the seeming paradox of an engine giving its maximum power output, without as great a capacity to "pull" as it possesses when developing less power. It is the torque that pulls—which, as it is communicated to the driving wheels, produces the turning effect that means ability to climb hills and force a way through deep sand and mud and other heavy going. A change-speed gear is an approximate means of applying the full value of high power by converting speed into torque, but because no change-speed gear provides satisfactorily for an infinite series of speed ratios, none of them does away with the paradox referred to. With an engine such as the steam engine, in which the torque can be maintained through a wide range of speeds, the necessity for a change-speed gear is almost obviated. Most gasoline engines have very low torque at high speeds—so low, in fact, at their very highest speeds, their power also drops to less than it is at more conservative rates.

The Piston-pin Bearing.

Editor THE AUTOMOBILE:

[358.]—Why is it that piston-pin bearing in a gasoline engine is smaller than the connecting-rod bearing on the crankshaft? It seems to me that, since the full pressure upon the piston head is communicated through both of these bearings, the duty on both is the same, and that they should, consequently, be designed of the same proportions. ALFRED E. HASSALL.

Louisville, Ky.

The piston-pin bearing is subject only to a slight oscillation, varying in accordance with the connecting-rod and stroke lengths. The bearing at the big end of the connecting-rod rotates constantly. This is the difference between the work required of the two bearings, and explains the difference in their proportions, provision for take-up, and in various other minor details.

Smoky Exhaust and Excessive Lubrication.

Editor THE AUTOMOBILE:

[359.]—Is there any way in which the excessive smoke that issues from the exhaust may be lessened? I have an air-cooled runabout and am bothered a good deal by its smoky exhaust. Nothing seems to be wrong about the mixture, and the only solution I can think of is over-lubrication. What is your opinion? J. W. HIBBARD.

Montgomery, Ala.

Over lubrication is the usual cause of smoke from the exhaust, and air-cooled cars, because of the high temperatures at which their engines normally work, are likely to be particular offenders in this respect. The remedy is to be found in the direction of less lubricant or heavier lubricant, or both. It is just possible, unless you have made very careful tests, that you are using too rich a mixture.

Lost Motion in Steering Wheels.

Editor THE AUTOMOBILE:

[360.]—The steering wheel of my 24-horsepower touring car moves over a quarter of a turn without affecting the front wheels. When it was new, it was not so bad, but still had considerable play, and every car I have examined is the same way to a greater or lesser extent. Is this play desirable for any reason, and, if not, is there no means of avoiding it? Personally, it seems to me that it interferes materially with the certainty of control.

Atlanta, Ga. JOSEPH McLEAN.

The reason that the average steering wheel possesses lost motion is because of the irreversible element commonly introduced at some point within the steering gear. It is this element that keeps road shocks from being communicated to the hand of the operator. The principle of all irreversible steering mechanisms involves means of allowing the steering wheel a very considerable movement in producing a very slight movement of the road wheels. As a consequence, all looseness of joints, play between worm and segment, or nut and screw, etc., is vastly magnified before it reaches the hand, and the construction that requires a complete revolution of the hand wheel to bring the road wheels from hard over to hard over unavoidably involves considerable rotation of the hand wheel merely on account of the slight play that the best fitting does not avoid. Reversible steering mechanisms have fewer joints, and consequently revolve more quickly.

Single or Double Universal Joints.

Editor THE AUTOMOBILE:

[361.]—Will you give me your opinion in regard to the use of single or double universal joints between transmission and rear axle, with the propeller shaft drive? Please state the reasons pro and con. DR. M. B. DUNNING.

Siam, Iowa.

A single universal joint transmits rotary motion irregularly—that is, with a periodic acceleration and retardation during each revolution. By the use of two universal joints, properly applied, and working through corresponding angles, this irregularity in one universal joint counteracts that in the other, and the rotation becomes perfectly uniform. However, the simplicity of one joint is not to be despised, and with a small angle the irregularity is so slight that it will not cause a perceptible jerkiness in the drive. Incidently, the use of only one joint requires some provision for permitting the rear axle to rotate slightly as it rises and falls, because the propeller shaft is not flexibly connected to it. This provision may take the form of a loose mounting of the spring seats upon the axle, or may be allowed for by the flexibility of the springs.

Picric Acid Again.

Editor THE AUTOMOBILE:

[362.]—In various places I have seen certain compounds advertised, the purpose of which is stated to be that of increasing the engine power. I am told that picric acid is a common ingredient of these compounds. Perhaps you will enlighten me as to whether the use of such mixtures is likely to injure the engine or not.

Bloomfield, Ind. GEORGE H. GILMAN.

Picric acid is injurious to the engine, because it will cause excessive corrosion, and possibly even the formation of dangerously-explosive deposits. Its use is defensible only for racing, and even in racing its objections may offset its advantages. It comes in the form of yellow crystals, which are slightly soluble in gasoline. It is a chief constituent of lyddite and other explosives, from which it may be judged that it is not a chemical to take chances with. The advertised fuels you refer to are more likely to have petroleum ether in them, rather than picric acid. Petroleum ether has been the secret of more than one remarkable engine performance, under test or competition conditions.

The Transcontinental Records.

Editor THE AUTOMOBILE:

[363.]—To settle a wager, will you kindly give the different transcontinental records? Yours truly,

H. H. FRANKLIN MANUFACTURING CO.

Syracuse, N. Y.

1903.—George A. Wyman, a California motorcyclist, left San Francisco on the afternoon of May 16, 1903, and reached New York on the afternoon of July 6, having made the trip in 50 days, elapsed time. His is the distinction of being the first person to cross the continent on a motor-driven vehicle of any description—a "California" motorcycle of 1 1-2 horsepower, weighing ninety pounds.

1903.—Dr. H. Nelson Jackson, with a 20-horsepower Winton, and Sewall K. Crocker as chauffeur, started from San Francisco May 23, 1903. He made a northward detour into Oregon, equal to at least a thousand miles of road travel as compared with the main overland route. New York was reached on July 26, 1903, 63 days out, making the first complete transcontinental trip by automobile.

1903.—The Packard touring car, "Old Pacific," operated by Tom Fetch, and carrying M. C. Krarup as passenger, started from the Cliff House, San Francisco, Saturday, June 20, arriving in New York August 21, 61 days out. This was the most completely equipped and elaborate trip ever undertaken; the time made by Fetch stood through 1903.

1903.—The fourth was the Oldsmobile runabout party, consisting of L. L. Whitman and E. I. Hammond, of Pasadena, Cal., who sent their machine by boat to San Francisco, from whence they started July 6, carrying a letter of greeting from Mayor Schmitz, of that city, to Mayor Low, of New York. They reached New York September 17, 73 days out, and after delivering their message to Mayor Low on the following day, extended their trip to Portland, Me., where they arrived on September 23. This was the last 1903 transcontinental trip.

1904.—L. L. Whitman, on his second transcontinental attempt, left San Francisco at 2 P.M., New York time, August 1, 1904, and reached New York at twenty minutes past 1 o'clock on September 3, having accomplished the journey in 32 days, 23 hours and 20 minutes, practically halving the best previous record. This was the first ocean-to-ocean trip in an air-cooled automobile, a 10-horsepower Franklin. There were no other attempts on this course during 1904.

1905.—Megargel and Huss, driving two Oldsmobile curved dash runabouts, "Old Scout" and "Old Steady," left New York on May 8, 1905, and raced to the opening of the Lewis and Clark Exposition at Portland, Ore. Each driver had a companion. Huss, with "Old Scout," reached Portland first, making the trip of between 3,500 and 4,000 miles in exactly 44 days and driving up to the door of the Administration Building of the Exposition an hour before the official opening.

1905.—Percy F. Megargel and David F. Fassett left New York in a 16-horsepower Reo touring car on August 19, 1905, and made a round trip to the Pacific coast and back again to New York, going by way of Portland, Ore., and San Francisco. They left San Francisco on the return journey November 21, 1905, and arrived in New York, June 9, 1906. The odometer on the car registered 11,780 miles. The trip extended over a period of 294 days, of which a good deal of time was lost; the car was abandoned in the bed of a river in one case and remained there for three weeks.

Play in the Steering Gear.

Editor THE AUTOMOBILE:

[364.]—I would like to ask some of your experts if a steering gear should be, when properly set, without any, or very slight, lost motion, or play, of the steering wheel. F. L. J.

Utica, N. Y.

When a steering gear is properly adjusted there should be very little lost motion or play in the steering wheel. However, with some types of steering gear there is no provision made for taking up the lost motion due to wear in the worm and sector, or nut and screw, as the case may be. In such cases it will be impossible to adjust the steering mechanism so as to eliminate all lost motion.

There Are Auto Drivers and Drivers.

Editor THE AUTOMOBILE:

[365.]—The illustrations in the August 2 number of the Automobile, under the head of "Automobile Accidents," shows very forcibly what was stated in your valuable paper a short time since: that there are a surprisingly large number operating cars who are a menace to the public safety and themselves as well.

Figure 1 illustrates a case of unpardonable carelessness.

Figure 2 is in the same class, as it indicates too great speed under the circumstances; I can hardly connect that with careful driving in a city street.

Figure 3 is too much of the "Good Samaritan" and extremely poor judgment combined in about equal parts.

Figure 4 is an anomaly, pure and simple, as if I were that operator I should have turned to the right some ways back. It may be a notion of mine, but, if I remember rightly, I am in the habit of "following" on the right-hand track, and "meeting" on the left. How is that? Again, it shows poor judgment in following close to street cars except when absolutely necessary, and then great care should be taken in turning, especially to the "left," where there are double tracks.

Figure 5 shows the operator on the wrong side of the street. I find it good policy to "keep in my own back yard" when driving in the cities and towns.

Figures 6 and 7 are "good illustrations of poor judgment." A gentleman for whom I worked when I first commenced automobiling "illustrated" Figure 6 very "satisfactorily." He usually drove the car when he was along, and did so in this case. We were following a buggy at about an eight-mile gait, and he allowed the car to creep up so close that the buggy spring rammed our radiator tank, which made it necessary to hunt up a plumber, with whose assistance and a "tinker's dam" we "resumed" in about an hour and a half. One of his favorite breaks was to ride at a good speed nearly to the place he wished to stop at, and then set both brakes hard and "slide" to a standstill. And yet some people wonder why they have trouble with their car, while Mr. So and So hardly knows what trouble is. F. BROWN.

Westover, Pa.

Old Tire Casings for Temporary Repairs.

Editor THE AUTOMOBILE:

[366.]—We are subscribers to The Automobile and the writer takes great interest in pages containing "Letters Interesting and Instructive." In the matter of protection to outer casings, I have noticed very little comment, and it might be of some value to automobilists to know that an old casing is worth much to the tourist, or even to the physician, or to any one who keeps his automobile in almost constant use.

SECTION OF OLD CASING EYELETTED FOR BOOT.

Instead of selling old casings to the scrap collectors, they should be cut up into sections, say from 6 to 12 inches in length, as they will provide excellent boots for temporary repairs in case of damage to the shoe of the tire. By punching a row of holes, say one inch apart, as shown in the illustration just above the bead, and lacing the section over the casing, they make fine boots for use in any emergency. They are softer than raw hide boots and hug the tire closer.

HIPP & HALL AUTOMOBILE CO.
W. Hall, Secretary and Manager.

Cleveland, O., August 1.

The official registration lists of Great Britain showed that 45,490 automobiles had been licensed in the kingdom up to June 30, of which Ireland, Scotland and Wales have only a few more than 6,000 cars. In 1904 there were but 18,340 motor vehicles in Great Britain altogether.

From the Peaceful Connecticut To the Mineral Laden Ozarks

DRY BROOK THAT SERVED AS ROAD IN MISSOURI.

IT was the intention of Herbert C. Brown, of Los Angeles, Cal., when with George H. Barker, another Californian, he left Chicopee Falls, Mass., in a Stevens-Duryea, to make an automobile trip to San Antonio, Texas. For a time, at least, the journey came to an end at Kansas City, Mo., with Mr. Brown as the only survivor, as Mr. Barker was compelled to quit the trip at Memphis and hasten to New York on important business.

The two men made ample preparations for touring, both wearing complete suits of khaki, this material being considered by them the most serviceable for the conditions to be encountered. The car carried no tonneau, but a platform was fitted to the rear for the purpose of carrying two trunks. Besides furnishing him with data which he expects to develop into a road map, the trip enabled Mr. Brown to lay out what he considers the finest one month's tour that can be made out of New York. It traverses many of the beautiful and historical spots of Pennsylvania, Virginia, and Tennessee, looping eastward through one of the pleasure resorts of Indiana.

On this tour one may see Washington, the home that Thomas Jefferson built, the Luray caverns, Gettysburg, Chattanooga, Chickamauga and Lookout Mountain. There are many other points of historical and sentimental interest, yet Mr. Brown could not find a soul in Washington to tell him of a route for his trip westward from that city; and for miles, traveling the pikes of Virginia, past some of its famous resorts, he saw only one other automobilist.

The real story of the tour begins with New York. From Springfield, Mass., to the metropolis, the regular route through Hartford and New Haven was followed, and a narrative of it would be the story of every Boston-New York run. Leaving New York by the Twenty-third street ferry, a bold start was made on the New Jersey pikes, and two days were utilized in making the run to Philadelphia, with a stop over night at Trenton. As Mr. Barker was formerly a resident of New Jersey, he wished to renew his acquaintance with many points of interest.

Leaving Philadelphia at 9 o'clock in the morning, the roads were found good to Coatesville, but from there to Bird-in-Hand they were rather poor. The day's run showed ninety-four miles to York. On this tour a side trip can be taken to the Gettysburg battlefield, where much of interest may be seen. From York the route lay through Littleton and Crosby crossroads to Washington. The roads were fair, but some of the grades put the car to a severe test. In one place the gradometer showed a rise of 30 per cent., while several times 20 per cent. was registered. Very heavy going was encountered in more than one place. The odometer showed the distance between York and Washington as 75 miles.

In spite of the difficulties encountered, Mr. Brown is inclined to the belief that the inland route is preferable to the roads by which Washington may be reached from Philadelphia in sight of water. What stretches are poor, he says, are so for only a short distance, and are not to be compared with the difficulties of the other route. One thing that struck the Californians, as in fact it does every Westerner, was the odd prices charged for toll. Any number of times the toll was 11 cents, or 13, or 17. The tolls ranged from 3 to 40 cents. This on the Lancaster pike, which was found in good condition throughout its length.

It was on the trip from Philadelphia to Washington that Mr. Brown had one of the thrillers of his tour. At Columbia, Pa., a bridge a mile and an eighth long spans the Susquehanna river. It is a railroad bridge, but planked for its entire length. The tourists saw no other ford in sight, so they negotiated with the bridge tender to let them cross for a dollar.

"All right," said the man, "only look out for the freight train ahead. It may take a notion to back up."

So Mr. Brown followed the train cautiously. The bridge was not wide enough for train and automobile to pass, and so the risk was considerable. The car had gone a considerable distance, when the train, sure enough, took a notion to back up, as the tender said it might. Mr. Brown was about to apply the reverse, and make a race back to the starting point, when the train took another notion—this time to proceed on its journey. The bridge was then crossed in safety.

At Washington the tourists spent some time in seeing the sights of the national capital, and then, loaded with all the

IN FRONT OF AN OLD-TIME VIRGINIA MANSION.

BAD MUD HOLE ON AN EASTERN VIRGINIA ROAD.

AT TOLL GATE NO. 4 ON THE WINCHESTER PIKE.

U. S. Survey maps they could find bearing upon the country they were to traverse, they set out through Virginia toward the setting sun. Washington automobilists seemed to possess no information about the roads to the west, and it was impossible to obtain definite information about a feasible route from that city in the direction they desired to take. This, however, may have been due to the tourists not getting to the right sources for such information.

Out of Washington the route followed led through Fairfax Courthouse, and Fairfax to Bluemont—three miles straight up and three straight down, as Mr. Brown puts it. These grades are near Bluemont, and show 20 per cent. almost without a break for the six miles. Brakes cannot be counted on always to hold a car. A better route than this can be secured by going via Leesburg from Washington to Bluemont, thus cutting most of the bad grades. To Castleman's Ferry, over the Susquehanna, the roads were poor; but, rolling off the bridge at the ferry, the motorists were confronted with as pretty a five miles of road as they had ever traveled. In the heart of the mountains they discovered the splendid Winchester pike, not used by heavy teams, and therefore in the best of condition for automobiling. Berryville and Winchester were passed, the run for the day being ninety-three miles and ending at Staunton.

There are many points of historical interest and scenic grandeur on this road. At Fairfax Courthouse is on probate the will of George Washington. Fine portraits of the first President and of Lord Fairfax hang on the courthouse walls. At Winchester Courthouse, John Brown, whose move to free the slaves was premature, was tried. There, too, George Washington once had headquarters. It was to Winchester that Phil Sheridan made his famous ride of twenty miles in the Shenandoah valley, a feat celebrated and commemorated in song and story.

Farther on, in the next day's run, there was plethora of frightened horses and of women, who abandoned their rigs and left the task of holding them to one of the tourists.

The road runs past Lexington, where stands Washington College, which the Father of his Country endowed with the $50,000 voted him by Congress for his services. Crossing the natural bridge, one of the wonders of Virginia, Luray Cave, is reached. This is a marvelous example of the often-beautifully erosive work of nature. This cave alone is sufficient to repay one for the fatigue of the long tour. It was in this vicinity and close to Roanoke that George III., before he was relieved as recorder of deeds for the colonies, granted to Thomas Jefferson a large tract of land. The latter hired Washington to survey the land, and the initials "G. W.," now engraved under the natural bridge, are said to have been the handiwork of the great surveyor. On this site Jefferson built his home, and it stands almost unchanged to this day.

Leaving Roanoke, the tourists went over Rocky Mount, Va., Charlotte, N. C., and Greenville, S. C., to Knoxville, Tenn. It is well to draw the veil of silence over this part of the trip, for the roads were bad, and traveling was anything but a pleasure. Mr. Brown suggests, instead of this route from Roanoke, the road via Bristol to Knoxville, on which may be avoided many bad and hilly stretches. Out of Knoxville came Chattanooga, Lookout Mountain, Chickamauga Park and Missionary Ridge, once the scenes of bitter battles, now maintained as a public park, with 3,000 Union and Confederate cannon placed in the same positions from which they spoke in those stirring days. Then came Nashville and Memphis, where the Mississippi was crossed on a lighter.

ONE OF THE NATIVE NORTH CAROLINA AUTOMOBILES.

SENATOR COCKRELL'S BIRTHPLACE NEAR GLASCO, MO.

Into Arkansas, where automobiles are scarce, led the journey. In the main, the line of the 'Frisco railway was followed, although this was departed from in favor of some of the wildest country which this part of the Middle West affords. The objective point was Springfield, Mo.

Over this route traveled DeSoto, westward bound, before his followers lowered his body into the Father of Waters. Close to Mr. Brown's route lies the spot, marked by curiously upturned stones and huge marks as of primitive axes on the trees, where the Spaniard is said to have buried his treasure before turning eastward to escape from the trap into which he had been drawn. From this treasure spot the valley of Southern Missouri can be surveyed for fifty miles, and Arkansas also comes into the line of horizon.

Through the Ozarks, which are the mountains of Southern Missouri and Northern Arkansas, Mr. Brown's tour resembled a triumphal march. No matter how the ordinary conveniences of life may be lacking in that section, the telephone is to be found in almost every house, be it of logs or boards. Says Mr. Brown of this part of his trip:

"I attracted more attention than the President driving down Pennsylvania avenue in Washington. Mine was the first invading automobile. As I went on, I found crowds from the fields and woods waiting to see me pass. I met a young country boy running breathlessly down the road.

POST ROAD OFFICE IN THE OZARKS 30 MILES FROM RAILROAD.

"'Well, I got here,' he said.

"'How did you know I was coming?' I asked.

"'My brother rode out to the field horseback to tell me,' he explained. 'They telephoned from the last town.'

"'Where's your brother?'

"'Oh, he's gone on ahead,' said the boy.

"So this hero on horseback was doing the Paul Revere act for sections which the telephone would not reach, and I was the big show."

In this part of the tour the roads most commonly used are the beds of streams, even if water is running in them, and Mr. Brown followed the universal example. In one day he ran twenty miles in creek beds and forded twenty streams. In some places the water came over the floor of the car. The going was strenuous, especially when rains came, for these streams go up from five to ten feet in a night. In one place he found the car unable to make headway over the road, which consisted of a series of shelves of rock. He hired four men, and they worked five days in building a way for him to get on what the natives called a "well-traveled highway." They gave it this name because a team went over it once a week.

The route of the tourists lay westward of the Arcadia country, where Evangeline is said to have slept while Gabriel, for whom she was searching, passed within earshot, never to be seen again by her. Between Springfield and Lamar there were thirty miles of stumps and plowed fields to be covered, and the speed was often not better than three or four miles an hour. But this was nothing as compared to the mud encountered twenty-six miles north of Nevada, where the Marias des Cygnes river had overflowed the lowlands and for ten miles had made everything a mass almost like chewing gum. Boards had to be laid in the road to give traction, and sometimes the wheels had to be dug out. It took an hour and a half to drive four miles. Teams were often a necessity. The final run of 116 miles into Kansas City was made in one day, over fair dirt and macadam roads.

The only parts that had to be replaced on the car were the tires. Two sets were used on the trip. The actual cost was a little less than four cents a mile, which would be two cents for each passenger. In some parts of the country traversed railway fares are four cents a mile.

For a pleasant thirty-day tour out of New York, Mr. Brown suggests his route to Nashville, thence to French Lick Springs, Ind., the Middle West's Monte Carlo (that was), and thence, via the northern route, back to New York. Mr. Brown started to St. Louis from Kansas City, but, finding his time limited and the roads not in the best of shape, went by rail. He had his car shipped to the South, where he has interests, and will devote part of the summer to touring in connection with his business.

SOME OF UNCLE SAM'S ROAD WORK.

WASHINGTON, D. C., Aug. 13.—Probably no field of work is of greater interest to the public at large than the improvement of the highways. The Office of Public Roads, as now constituted, represents a distinct stage in the development of the work undertaken by the Federal Government in 1893 by the establishment of the Office of Road Inquiry. At the time of the establishment of the office, the lack of a knowledge of existing conditions was a serious hindrance to an intelligent application of any plan for road improvement. The name originally chosen for the office was suggestive of the purpose of Congress, which was to inquire into systems of road management throughout the United States, and into methods of road making, and to disseminate information as to the results of such inquiries.

In a recent report on the subject the Secretary of Agriculture said the most important result which has been attained up to this time, whether produced by influence in or outside of the Office of Public Road Inquiries, is that the people in all parts of the country are now interested in the subject of road improvement, and are seeking such information as will enable them to carry on the work along intelligent lines. It was found, therefore, that the collection of information must of necessity become only one feature of the work of the office, and that facilities must be provided for answering as well as awakening inquiries. At the same time the necessity for demonstrating scientific and economical methods of road construction instead of mere agitation has been clearly established.

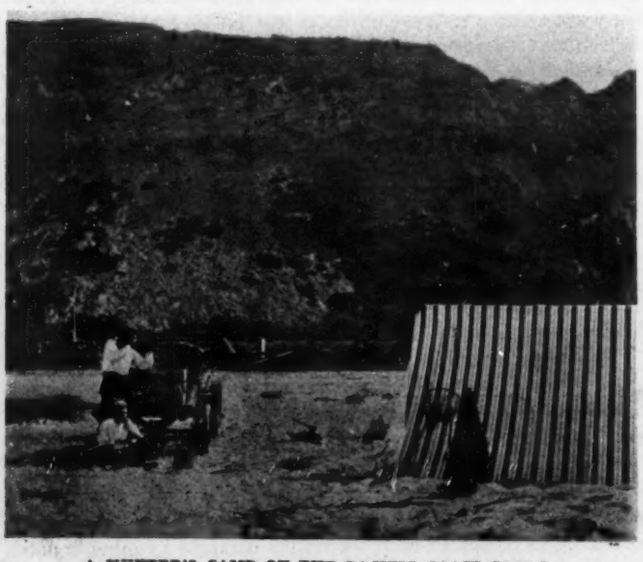
While it is known in a general way that some parts of the country have progressed much further than others in the matter of road improvement, there is little available information regarding what has been accomplished in the various states and counties. If comprehensive statistics were available it would be shown that large sums of money are annually wasted in some sections, while in others surprisingly satisfactory results are obtained at a moderate cost. The office is now collecting information from every county in the United States in regard to the mileage of improved and unimproved roads, the amount of cash tax, bonds issued, and other information of a similar nature. No more telling argument for reform in wasteful methods can be adduced than to bring home to every county just what results they are obtaining as compared with the results obtained by other counties at a similar cost.

HUNTING WITH THE AUTO IN CALIFORNIA

LOS ANGELES, CAL., August 10.—With the open season on for doves and deer, the hunter who uses his automobile as a means of transportation for his hunting equipment and person is much in evidence in southern California. Almost at the city limits of Los Angeles winged game is plentiful, also game of the four-footed variety, for millions of doves, quail and rabbits abound and an occasional deer. For weeks past hundreds of lovers of game-seeking sport have been heading their automobiles to the "flights," where the limit can be bagged in the festive and juicy dove. August 1 marked the opening of the season for deer, and many sought the hills to the eastward, which is the stamping ground of this much-prized prince of four-footed eatables.

HUNTRESSES AND THEIR GAME.

It is an easy matter to leave Los Angeles by automobile early in the morning, and after a day's sport in the vicinity of the foothills, return to the city during the cool of the evening. To those who are fond of camp life there is every opportunity presented to enjoy this pleasing diversion. A typical southern California automobile outing was indulged in last week by R. B. Hain, J. J. Cluxton and H. E. Gilley. The party started with a complete camping outfit secured to the rear of the car, and headed for San Diego by the way of the coast route. In spots this route is somewhat trying to four-wheeled vehicles, eighteen inches of sand, into which the car sank, hub deep, being encountered. As this feature was anticipated, however, it only added to the fun, and one of the valuable things learned by the trio of Nimrods was the good that can be extracted from a common plebeian shovel. Never go on a long tour, or a short one, for that matter, where sand is to be encountered, without a shovel, is their advice. They also advise a sufficient supply of snake medicine.



A HUNTER'S CAMP ON THE PACIFIC COAST SANDS.

Camps were pitched on the shore of the Pacific, and while one of the party indulged in his liking of surf fishing, the others were busy bagging doves and rabbits a short distance inland. Nothing can excel the ideal conditions here existing for the hunter. There need be no apprehension of wet weather conditions, at this time of the year, and temperature is softened by gentle breezes from the Pacific. Three camps were made by the party on the way to San Diego, and a week was spent at Coronado. The return trip to Los Angeles was made in two days.

AUTOMOBILE WITH CAMP OUTFIT READY TO MOVE.

Women also join in the sport of hunting in southern California, and frequently make some of the number in the automobile hunting party. The first illustration shows a bevy of fair huntresses displaying the results of a day's gunnery.

A TOUGH TRIP FOR A RUNABOUT.

Between Stockton, Cal., and the Yosemite Valley there is a series of roads—so called by courtesy—that are rough, hilly, sandy, muddy, rutty—everything, in fact, that roads should not be. A hundred and twenty miles of it. Taken together, these roads have the gentle reputation of being the roughest and most dangerous in California. As the time-honored small boy will persist in doing things that are dangerous for no particular reason other than to see if he *can* do them, so automobilists have from time to time essayed to drive their cars over that 120 miles; but Dame Rumor hath it that not one out of an even 120 cars ever got through on the day they started and not a few were broken down or broken up before finishing. The 121st car, however—a little fellow, too—succeeded in going through without mishap. And when it got to the end of the run it turned around, next day, and came home again over the same route in half an hour less time and with the same amount of mechanical trouble—none at all. This was done by a Type VII Autocar driven by Bert Saunders and Will Middleton, of San Francisco. On the outward trip, which was made in thirteen hours, the car had to resort to its lowest gear for no less than sixty miles—half the distance—on account of the deep sand and long grades. To make it hot for the adventurers, the thermometer went up to a hundred and two in the shade! The return trip, made the following day, was accomplished in twelve and a half hours.

Another report of a different kind of performance by the same type of car comes from Minneapolis, where in the recent efficiency contest the Autocar runabout ran 33.6 miles, over ordinary country roads, on a consumption of one gallon of gasoline.

THE A. G. A. ROAD SIGNS OF FRANCE

By W. F. BRADLEY.

PARIS, Aug. 8.—Three distinct classes of road signs are employed in France. The oldest are those erected by the government, départementale or communal road authorities, giving only distances from place to place. For the past seven or eight years the Touring Club of France has placed both distance and danger posts where needed, these latter being intended more especially to mark spots likely to prove difficult to cyclists. As automobiling became more general, and the speed of cars increased, a new condition of affairs was brought about, many of the spots marked dangerous to cyclists offering no difficulty to motorists and the signboards which could be easily read by a man on wheels were illegible to the occupants of a rapidly moving car.

Descente rapide: Rapid Descent.

Montée: Steep Hill.

Virage à droite: Turn to Right.

Virage à gauche: Turn to Left.

Virage avec montée: Turn Followed by Hill.

Virage avec descente: Turn Followed by Down Grade.

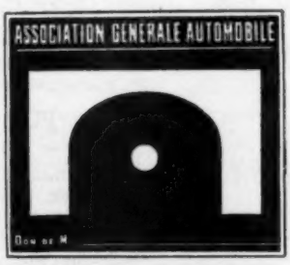
Dos d'âne: "Donkey's Back."

Caniveau: Ditch Across Road.

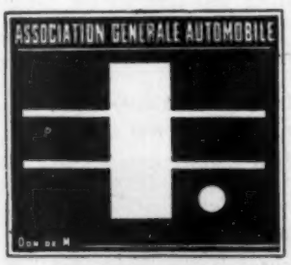
The Association Générale Automobile two or three years ago adopted a third series of road signs intended especially for automobilists. Being generally well provided with maps and guides, the autoist is not so dependent on distance boards as are other travelers, but he does want to know what lies ahead of him. The fifteen A. G. A. signals tell him this, and tell it to him in an unmistakable manner even when traveling at 50 miles an hour. As will be seen by a glance at the accompanying illustrations, every variation in the nature of the road is indicated by a white sign on a black ground. Rapid descent, steep hill, turn to left, turn to right, turn followed by hill, turn followed by down grade, "donkey's back," ditch across road, grade crossing, passage under road, tram lines above level of road, bad stone paving, dangerous crossing, winding descent with bad turns, village, are the different indications given by the signs. The black or white spots indicate that it is precedent to sound the horn.

Excepting "Association Générale Automobile" on the top and the name of the donator at the foot, there is no wording on the signs. The posts are put about 300 yards before the obstacle, at the right-hand side of the road, and placed at an angle so as to be clearly visible by all approaching them. At the present time about one thousand of these road signals have been placed throughout France, but this number is being increased every day either by the association itself or by gifts through the association.

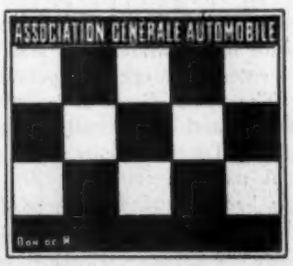
assage à niveau: Grade Crossing.



Passage en dessous: Passage Under Road.



Railes en saillie sur route: Tramlines above Road Level.



Mauvais pavé: Bad Stone Pavin

Les Points blancs ou noirs indiquent qu'il est prudent de corner.

Croisement dangereux: Bad Cross Roads.

Descente sinueuse avec mauvais virages: Winding Descent with Bad Turns.

Village: Village.

Les Poteaux seront placés à 300m environ en avant de l'obstacle et à droite de la route

A subscription of $5 will pay for a sign, the donator having the right to indicate its position, and his name being inscribed at the foot if desired. In the Grand Prix race the A. G. A. signs were exclusively employed, a large number of ordinary posts being put round the course and a number of broad blue bands with the sign in white stretched over the road. At mile-a-minute speeds it is certain that a simple figure is much more readily comprehended than "left-hand turn," while foreign drivers find themselves at no disadvantage. It is for this reason that the adoption of the A. G. A. signals may be suggested by Chairman Thompson for the Vanderbilt Cup race.

It was in 1902 that the Association Générale Automobile was formed as an offshoot of the Automobile Club of France, with offices in the same building. It was intended for those automobilists who had no need of the larger club, with its well-developed social element, but desired a center at which they could obtain information and aid. There is at present a membership of between four and five thousand.

The work undertaken consists of legal protection of its members before the courts—members prosecuted in the departments of the Seine and Seine et Oise are defended free of all cost; technical studies; information for tourists; the placing of danger and distance boards on the highways; free customs passes into foreign countries; the drawing up of maps and reliable guides; discount to members on tires, spare parts, etc., and on insurance rates; the examination of chauffeurs and the awarding of diplomas to chauffeur-mechanics, as well as the supplying of competent chauffeurs to its members.

As soon as sufficient funds have been obtained, the association intends opening a school for the training of chauffeur-mechanics. A subscription list has been open for a few months and has brought in just half the required amount. The annual subscription of the Association is $5 a year, reduced by one-half for members of a recognized automobile club, such for instance as the A. A. A., who are immediately admitted on simple demand.

ACTUAL HORSEPOWER MUST BE CONSIDERED.

LONDON, Aug. 9.—In place of the constant succession of race meetings as in former years, the present season has been one of hill climbs. These, however, have ceased to be of much interest, and if they are to be restored to popularity, either some satisfactory formula must be evolved which will take all the determining factors of actual (not rated) horsepower, weight, and price into consideration, and which must also allow steam cars to enter these open competitions.

The A. C. G. B. I. is not running any reliability trials this season, and consequently there is nothing of interest taking place till the Tourist Trophy race on September 27.

A most interesting census of the motor vehicle registrations has been compiled by the *Autocar*. The following figures show the registrations up to the end of June:

	Cars Registered.	Motorcycles Registered.	Driving Licenses.
England	41,974	39,663	157,537
Wales	1,167	1,475	4,249
Scotland	3,513	3,096	10,296
Ireland	1,534	2,340	4,845
Total	48,188	46,574	176,927
Increase over June, 1905	16,191	11,868	69,501

These figures can only be regarded as eminently satisfactory, and well indicate the big advances which are being made over here.

Intense dissatisfaction is expressed in Germany with regard to the new automobile tax that recently went into effect. Hotel proprietors, merchants and business men generally complain bitterly that the law is interfering seriously with their trade owing to the fact that automobile tourists, disgusted with the law, refuse to cross the border into Germany. The law provides for a tax of $3.75 for a stay of five days or any part thereof, and $10 for a month's stay. Business near the French border is naturally the most seriously affected.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows.

Sept. 22-29.....—First National Automobile Parts Show, First Regiment Armory, Chicago; A. M. Andrews, Secretary, 184 La Salle street, Chicago.
Dec. 1-8.....—Seventh Annual Automobile Show of the Automobile Club of America, Grand Central Palace, New York City, under the patronage of the American Motor Car Manufacturers' Association.
Jan.....—Annual Automobile Show of the Association of Licensed Automobile Manufacturers, Madison Square Garden, New York City.

Tours.

Aug. 25.....—Annual Automobile Day and Parade of the Duluth Automobile Club, Duluth, Minn.
Aug. 29-31.....—Three Day Economy Run, New York Motor Club.
Aug.....—Annual Gymkhana Games of the Worcester Automobile Club at North Grafton, Mass. (Date to be announced.)
Sept.....—500-mile Endurance Test, Grand Rapids (Mich.) Automobile Club. (Date to be announced later.)
Sept.....—200-mile Road Race, for the Farson Cup, Chicago Automobile Club. (Date and course to be announced.)
Oct. 1-2.....—St. Louis, Mo., Automobile Parade and Carnival. St. Louis Automobile Club.

Race Meets and Hill Climbs.

Aug. 24-25.....—Empire City Track, New York, Race Meet, under management of W. H. Pickens.
Sept. 3.....—Race Meet, New Jersey Automobile and Motor Club, Weequahic Park, Waverley, N. J.
Sept. 3.....—100-mile Road Race, on 25-mile Circuit in Monroe County, N. Y. Rochester Automobile Club and New York State Automobile Association.
Sept. 3.....—Topeka, Kan., Race Meet of Topeka Motor Car League.
Sept. 3.....—St. Louis Fair Association Track Races. Entries close August 25 with J. H. Phillips, Manager, 2933 Olive street, St. Louis.
Sept. 6.....—Hill Climb, Algonquin, Ill., Chicago Automobile Trade Association.
Sept. 22.....—American Elimination Trials for Vanderbilt Cup Race. (Long Island Course probably.)
Oct. 6.....—Vanderbilt Cup Race, American Automobile Association.

Motor Boat Races.

Aug. 21-23.....—Gold Challenge Cup, American Power Boat Association, on St. Lawrence River at Chippewa Bay.
Sept. 10-15.....—National Motor Boat Carnival, Hudson River, New York City. Under the auspices of the Motor Boat Club of America.

FOREIGN.

Shows.

Sept. 1-8.....—Canada International Exhibition, St. John, New Brunswick.
Oct. 5-14.....—Leipzig (Germany) Exhibition, Kyrstall Palast.
Nov. 1.....—New Zealand International Exhibition opens at Christchurch.
Nov. 1-16.....—Berlin (Germany) Automobile Exhibition.
Nov. 15-24.....—London, Olympia Motor Show.
Nov. 23-Dec. 1—London, Stanley Show, Agricultural Hall.

Races, Hill-Climbs, etc.

Aug. 1-15.....—Circuit des Ardennes (Belgium).
Aug. 9-12.....—Malchamps (France) Hill Climb Tests.
Aug. 15-16.....—Ventoux (France) Automobile Meeting.
Aug. 14-19.....—Ostend (Belgium) Meet.
Aug. 18.....—Liedekerke Cup Race.
Aug. 23.....—Semmering Hill Climb.
Aug. 27-Sept. 2—Brescia (Italy) Automobile Meeting.
Sept. 3.....—Auvergne Cup Race, France.
Sept. 9-20.....—Pallenza (Italy) Automobile Meet.
Sept. 27.....—Tourist Trophy Race, Isle of Man, A. C. of Great Britain.
Oct. 7.....—Chateau Thierry (France) Hill Climb.
Oct. 23.....—Gaillon (France) Hill Climb.

Motor Boat Races.

Aug. 20-23.....—Ostend (Belgium) Motor Boat Races. Dover to Ostend.
Sept. 16.....—Juvisy (France) Motor Boat Meeting.

LATE SUMMER FINDS THE CLUBS HUSTLING

Syracuse Club's Road Signs Will Soon Be Ready.

SYRACUSE, N. Y., Aug. 10.—Officers of the Automobile Club of Syracuse report that the road signs are on the way. The club ordered fifty for use in the southern part of the county, from specifications gathered from a careful survey of the route. Some of the more dangerous spots have been taken care of with sample signs. Secretary Forman Wilkinson personally placed one of these at the top of the Oran hill, reading "Dangerous hill. Automobiles go slow. Erected by the Automobile Club of Syracuse."

WELL IMPROVED STRETCH OF HIGHWAY NEAR SYRACUSE.

The signs are 12 by 24 inches, of sheet steel, beautifully enameled in white, with dark blue lettering. They are very prominent and "show up" for the convenience of all concerned.

The specifications for the fifty signs ordered cover those for hills, general directions from place to place and all dangerous sharp points and railway crossings along the main thoroughfares. The specifications for the north, west and east of the local club's district are not yet procured, so the signs will not be ordered until later. It is understood, however, that the Auburn Automobile Club has received its signs, in which case the Syracuse organization will work in conjunction with that club at once, and the route will soon be "signed."

The Automobile Club of Syracuse has now 125 members and there is a steady, encouraging growth.

Quaker City Clubmen Will Assist in Enforcing the Law.

PHILADELPHIA, Aug. 13.—Director of Public Safety Potter will be supported in his crusade against reckless drivers of both automobiles and horses, by the Philadelphia Automobile Club. In an effort to aid in the punishment of reckless drivers, the club will probably ask the bureau of highways to deputize two inspectors to act in conjunction with the police.

President William H. Dick of the club has put himself on record in regard to the matter as follows: "I am heartily in favor of enforcing the eight-miles-an-hour ordinance in the city. While I think the limit is too slow, it is a law, and as such should be enforced. The club is willing to do all in its power to this end. That part of Broad street between Spruce and Arch streets is decidedly the most dangerous stretch in the city, and there the regulation should certainly be always enforced. It is difficult for a policeman to tell how fast a machine is traveling. It is even hard for anyone who has had much experience in such things. The assignment of men by the chief of the bureau of highways to aid the police in this connection would probably be a good thing."

Toronto's Club Inaugurates Good Roads Movement.

TORONTO, ONT., Aug. 6.—Roads around Toronto are said to be among the worst in the Province of Ontario. To start a movement to improve them the Toronto Automobile Club decided at a general meeting to offer prizes aggregating at least $800 to municipalities for road improving competition. There will be three cash prizes—$500, $200 and $100, respectively, which will be paid to the municipalities which show the piece of roadway, a mile long, on which the greatest improvement has been made by July 1, 1907.

Merits entering into the competition will be (1) proper drainage; (2) serviceable width; (3) efficiency of crown; (4) hardness; (5) smoothness; (6) permanency of construction. No first prize will be given unless there are five entries, no second prize unless there are eight entries, and no third prize unless ten. No first prize nor any prize will be awarded unless the work done is finished to a standard approved by Mr. A. W. Campbell, Commissioner of Highways for the Province of Ontario one representative from York County Council and one representative from the Toronto Automobile Club. At the close of the meeting $400 was subscribed for the fund by members present. Further subscriptions are being received and $300 will be taken out of the club treasury. It is hoped to increase the fund to $1,000, in which case the prizes will be increased.

The proposal to form a Provincial association of automobilists for Ontario, with the object of carrying on a good roads propaganda, looking after legislative matters, and the common interests of the motorists generally, was formally adopted at a meeting of the Toronto Automobile Club recently. The following resolution was passed unanimously: "That this meeting express its approval of the plan to organize an Ontario automobile association for handling business of interest to motor owners in the Province and that the directors be asked to submit a plan for such organization at the next general meeting of the club."

Topekans Organize a Club and Decide to Hold Race Meet.

TOPEKA, KAN., Aug. 10.—Twenty automobilists of this city have formed a club under the name of the Topeka Motor Car League. Articles of incorporation are to be taken out under the state laws, and the club has begun a career of activity by announcing that it will hold a race meet on the local track, Labor Day, September 3. A set of rules concerning the laws of the road

A FAIR PRIZE WINNER AND HER ROSE-TRIMMED CAR.

In a recent carnival at Richford, Vt., Mrs. F. C. Wheeler's car received first prize for its artistic decorations, which were a combination of evergreens and various colored roses.

has been adopted by the club and distributed for general use among its members. It is believed that a faithful observance of these rules by drivers will popularize automobiling and prevent restrictive legislation.

Minneapolitans Hold Their One Gallon Efficiency Contest.

MINNEAPOLIS, MINN., Aug. 11.—The gallon efficiency contest, conducted under the auspices of the Minneapolis Automobile Club, last Saturday afternoon was successful beyond the expectations of the most sanguine enthusiasts. With but one exception every dealer in the city had at least one car entered. The Aerocar, the only one of that make entered, finished in first place, covering 22.9 miles, and having a weight of 3,100 pounds, it secured a ton-mile record of 35.495 miles. Second honors were taken by the Frayer-Miller, with a weight of 3,170 pounds, which covered 22 miles, and secured a ton-mile record of 34.780. The other prize winners were: Buick, third; Stevens-Duryea, fourth; Packard, fifth; Stoddard-Dayton, sixth, and Autocar, seventh. An Orient buckboard covered the greatest distance, going 43.3, but, owing to the small weight carried, was unable to land among the seven prize winners. One of the surprises of the day was the large six-cylinder Kansas City machine which made 13 miles and weighed 4,660 pounds, outdistancing some of the smaller cars. The contest was based on ton-miles; that is, the weight of the car, with all freight considered, was multiplied by the number of miles covered. The course taken was along the Calhoun boulevard to Hopkins, then over by way of the Wayzata road between the two lower lakes of Minnetonka to the Superior boulevard, back to Western avenue, thence to Lyndale, to the clubhouse and back to the starting point. The way was easily followed as it had been marked by confetti from one end to the other. There were over thirty entries. Asa Paine acted as referee and F. M. Joyce, B. F. Nelson, E. J. Couper and George H. Daggett as judges.

A large party of Minneapolis automobilists have started on a 600-mile tour through Wisconsin to be gone six days. Col. F. M. Joyce, president of the Minneapolis Automobile Club, is acting as guide and superintendent to the party, as he has made the same trip on several occasions and is thoroughly familiar with the route followed, which is to Kilbourne City, to the dells of the Wisconsin, where two days are spent in sight-seeing, thence to La Crosse, and return to Minneapolis. President Joyce is planning another tour for September in an entirely different direction, to Glenwood, 150 miles from here, over a route which furnishes an unusually large percentage of beautiful scenery.

Chicago A. C.'s New Home Is Now in Sight.

CHICAGO, August 13.—Christmas Day is now the time set by the members of the Chicago Automobile Club for the occupation of the new clubhouse at 19 Plymouth court. The cornerstone of the building will be laid in September, or possibly the first week in October, and then work will be pushed steadily on the structure, in order to have it ready for occupancy by the holidays. Some changes have been made in the plans of late. When the proposition was first talked of it had been intended to put up the new building on 68 feet of ground on the east side of Plymouth court. Later the club was able to secure an option on 28 feet more to the south of this, and the plans were drawn for a building to occupy 96 feet of ground. The auxiliary association that will build the club has decided that the original 68-foot lot is large enough for the clubhouse, and has decided to go ahead with its construction rather than delay matters by increasing the size to the 96 feet frontage desired by some. The association has enough money to handle the 68-foot proposition comfortably and will award the contracts at once.

"The members of the club have been most patient," says Secretary Gorham in an interview, "but I think they will be well repaid for their wait. They have been obliged to go without a club this summer, although we have had headquarters in the Fisher Building. Now we are going ahead with our plans, and if we do not have a big house warming along about Christmas time I will miss my guess."

Philadelphia Has Cross Country Run, October 20.

PHILADELPHIA, August 13.—The Automobile Club of Philadelphia has named Saturday, October 20, for the fourth annual cross-country run for the cup donated by its secretary, H. Bartol Brazier. The course selected by the Tours and Runs Committee, which has charge of the affairs, is something over one hundred miles by the most direct route, and in general shape is quadrilateral, with sides of varying length. Philadelphia, Doylestown, Quakertown and Pottstown will represent the four corners, each of which is a control at which checkers will be stationed. Contestants will be required to have their time cards signed at all four points, but between controls they can use their own judgment as to the most feasible route. The second and third stages of the journey will afford opportunities galore for the exercise of judgment in this respect, for the country is so interspersed with water courses that there is no "direct" route, especially between Quakertown and Pottstown, and the shortest route is an up-hill-and-down-dale course over country roads. The contestant who prefers to stick to the pikes must of necessity cover many more miles than he who is willing to take a chance cross country. For this reason the "run" will be an endurance contest, with the odds in favor of the car having the most powerful engine, although, according to the miles, handicaps will be given the smaller cars.

The car which first returns to the starting point in front of the clubhouse at Broad and Walnut streets will be awarded first prize, handicap considered, and yet speed is distinctly discouraged in the committee's announcement, which threatens disqualification to any entrant who manifestly exceeds the legal speed limit either between controls or for the entire run—this to avoid any conflict with the authorities.

The rules allow one hour for luncheon, during which time the cars must be impounded under the care of an official and be left severely alone. Any time taken for repairs, replenishing fuel, etc., is charged against the contestant. Only members of the Automobile Club of Philadelphia are eligible, and racing cars and motorcycles are barred, the conditions calling for full touring trim and the maximum number of adult passengers in each car, owner to drive.

Under a strict interpretation of the state law, the course, allowing for speed reduction through Philadelphia and the smaller towns, cannot be negotiated much under six and one-half hours. There are no entrance fees, and entries will close October 18 at 5 P. M., with H. Bartol Brazier, secretary, 1409 Walnut street, Philadelphia.

Davenport Automobile Club Conducts a Hill Climb.

DAVENPORT, IA., Aug. 6.—A successful hill climb, under the auspices of the Davenport Automobile Club, was run off July 30. Six medals were offered for first and second honors in the one-cylinder, two-cylinder and large touring car classes, respectively, and there was a total of twelve entries. The last-mentioned class was won by a White steamer, owned by Oscar Schmidt, of Rock Island, Ill., and driven by Emil Buck, which made the ascent in :32. A protest was lodged by Peter Peterson, driver of the Pope-Hartford, which was second in the event, by the close margin of 1-5 of a second, against the White, because it was not equipped with lamps, the rules calling for full touring equipment, and as a result of the protest the event is to be rerun in the near future. The two-cylinder class was won by Dr. C. E. Glynn's Buick, driven by Frank Jungjohann, in :47 1-5, and the one-cylinder class was captured by Bert Brown in an Oldsmobile in :59.

Texans Hold Their Annual Watermelon Run.

HOUSTON, TEX., Aug. 11.—The watermelon run of the Houston Automobile Club was successfully carried out last week. An ice-cold melon was supplied to every car participating, and a royal melon eating contest was indulged in at the camp grounds outside the city. A silver loving cup was offered to the finder of the club melon, which was hidden along the road between Green Bayou and Pasadena station. As none of the participants in the run was able to find the melon, the cup remains the property of the club.

Rochester A. C. Celebrates a Successful Orphans' Day.

ROCHESTER, N. Y., Aug. 13.—Thursday, August 10, was a gala day for the orphans of this city. It was the occasion of the outing given them by the Rochester Automobile Club. The day was ideal and every minute of the time was enjoyed by the little ones. Shortly after two o'clock the trip commenced. The machines started away from the garage of the United States Automobile Company, made a circuit of the central part of the city and then headed for Seneca Park. A band on board a big auto truck headed the line, and was followed by 125 autos filled with laughing and shouting youngsters.

The parade was divided into brigades, with a captain in charge of each. The captains, who, with William C. Barry, Jr., chairman, and H. Seymour Bentley, secretary, constituted the committee of arrangements, were: For Rochester Orphan Asylum, ten cars, F. E. Mason; St. Joseph's, nineteen cars, Griff D. Palmer; Jewish Orphans' Home, eight cars, A. J. Rockwood; St. Patrick's, twenty-one cars, Lee Richmond; Church Home, twelve cars, George W. Kirkpatrick; St. Mary's, twenty-six cars, Henry G. Strong.

The children were dressed in white and carried flags. They were cheered all along the line by many spectators. At one point on the line the parade was stopped by a kind-hearted woman and the little ones offered lemonade and sandwiches. Many confectionery dealers sent donations acceptable to the youngsters. At Seneca Park all were treated with ice cream and cake, and after an hour spent roaming about the orphans were taken home.

Chicagoans Give Van Sicklen a Royal Welcome.

CHICAGO, Aug. 13.—N. H. Van Sicklen, of the Chicago Automobile Club and the last of the Glidden tourists, arrived to-day, and the local club arranged a big reception in his honor. There was a general rendezvous at Jackson Park, in front of the German building, at 2 o'clock, and speeches of welcome were made by President John Farson, of the Chicago Automobile Club, Secretary S. S. Gorham, and others prominent in local automobile circles. In Mr. Van Sicklen's party were Mrs. Van Sicklen, their son, Charles F., and the Misses Griffiths. This car has made the longest journey of any of the Glidden entries, the total mileage being 3,288. The following is the mileage sheet of Mr. Van Sicklen's party: Chicago to Buffalo, N. Y., 605 miles; to Bretton Woods, N. H., 1,149; to Concord, N. H., 102; to Boston, Mass., 106; to Hartford, Conn. 122; to New York, 132; to Hudson, N. Y., 123; to Herkimer, N. Y., 117; to Seneca Falls, N. Y., 111; to Buffalo, N. Y., 114; to Erie, Pa., 90; to Cleveland, O., 112; to Toledo, O., 120; to South Bend Ind., 178; to Chicago, 105.

The members of the Chicago Automobile Club have determined to arrange at once for the projected road race for the Ralph Temple cup. This contest will probably be held early in October and the course will in all probability extend through Milwaukee, Wis., Rockford, Ill., and some Illinois town further east. The contest will take three days and a large entry list is anticipated.

The A. C. of Pittsburg's Clean Score A. A. A. Tourist.

PITTSBURG, PA., August 11.—Philip S. Flinn, the lucky Pittsburg automobilist who made a perfect score for the Glidden trophy in the A. A. A. tour, was met at Greensburg, Pa., on his way home by eight touring cars with his clubmates and friends, who tendered him an enthusiastic reception. Mr. Flinn's car traveled a distance of 2,240 miles. Accompanying him during the tour were Mrs. Flinn, his sister, Mrs. George Alderson, and Thomas F. Dunn, the chauffeur. Mr. Flinn has been one of the most ardent automobilists in the city since the first cars were sold here, and has been one of the most active members of the Automobile Club of Pittsburg.

York Automobilists Active in Road Improvement.

YORK, PA., Aug. 13.—Autoists from all parts of the Keystone state have learned with interest that the York Automobile Club is taking an active hand in the good roads problem, and is doing all in its power to have the thoroughfares improved in this section. The latest real work has been started on the famous Gettysburg pike, which runs from this city to Gettysburg, 28 miles distant. This pike is traveled by thousands of autoists every summer and the improvements are badly needed at certain places. It is the direct run between New York and the National battlefield, and hundreds of the metropolitan tourists use it annually. The pike between here and Wrightsville, east to the Susquehanna river, is also receiving its share of improvement. This is a part of the same thoroughfare which goes through to Philadelphia. Aside from the interest taken in the furthering of the good roads the local club is devoting much of its time to the coming fall events which will consist of an endurance run and Orphans Day celebration. The local club enjoys the very best of prosperity and a busy business session is ahead for the winter months.

CLUB DOINGS IN GENERAL.

CANTON, ILL.—At the regular meeting of the Canton Motor Club, held August 1, a committee composed of J. A. Sheaff and S. R. Ellis was appointed to go before the board of review to endeavor to have the assessed valuation of automobiles in Canton reduced. The meeting was well attended and much interest was manifested.

MONTGOMERY, ALA.—The Montgomery Automobile Club is busy making arrangements for its annual picnic, the date of which will be set at a special meeting to be held at the office of the president, Dr. F. C. Stevenson, on Dexter avenue, this city, August 18. The club is making rapid progress in membership, the list now showing a total of twenty-five on the rolls.

NEW YORK.—A committee of the New York Motor Club recently appointed to consider the matter of securing larger quarters for the organization, has several projects to report at a special meeting of the directors to be held during the present week. A club run is on the tapis for August 18 to Long Beach, L. I., to participate in the automobile carnival under the auspices of the Long Beach Country Club.

ST. PAUL, MINN.—R. M. Neely, representing the St. Paul Automobile Club; G. A. Will, representing the Minneapolis Automobile Club, and Hubert McHugh, representing the Duluth Automobile Club, the three constituting a committee delegated to go over the roads between the Twin Cities and Duluth, have completed the trip. The committee found the route, generally speaking, in good condition, but will recommend certain improvements in making a report to their respective organizations which will make the course between the two cities an ideal one.

CHANGE IN CHICAGO RELIABILITY SCORE.

CHICAGO, Aug. 12.—As a result of the protests filed after the recent Elgin-Aurora endurance contest given recently by the Chicago Automobile Club and the Chicago Automobile Trade Dealers' Association, the judges of the contest held a meeting the latter part of the week and cleared up those which had been filed. The perfect score record was taken away from the Thomas car driven by W. B. Grammer, as the observer had failed to sign the sheet properly, and also because he had failed to report the case of car stop for traffic; a perfect score was given to Frank Nutt, of Kokomo, Ind., who had been penalized two points for adjustment of an oiler on his Haynes runabout; and W. E. Crosswell, who drove a Reo, was given a clean score because his observer lost the report cards.

AUTOMOBILE

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The Source from Which A. A. A. Criticism Comes. Because one committee of the American Automobile Association attempted a well-nigh impossible task—the combining of a contest with a pleasure tour—and some criticism followed, automobilists generally will regard with pronounced opposition the prejudiced vaporings to the effect that the whole structure of the national organization should be leveled to the ground and a new body brought into existence. Some of the adverse comments come from a source wherein the reason for antagonism to the A. A. A. is distinctly personal in character: a failure of the critic to obtain a place on the Racing Board. Another, whose newspaper ethics are subject to remark, to say the least, objects to the A. A. A. offering road books, insurance, etc., to its members at reduced rates, because such a plan interferes with his business arrangements. Both of these critics, in their own opinion, may have cause to attack the A. A. A. whenever opportunity offers, but it should be known publicly why their published statements bear the venom of spite.

THE AUTOMOBILE, from the first day of its control under the present ownership, has considered that its bounden duty was to reflect the growth of a great industry, assist its advancement in all possible manner consistent with reputable journalism, and to tell the story free from bias or favor. It believes that its efforts have met with the approval of the substantial class of men involved in the industry and the pastime.

The gospel of the automobile we have preached persistently, and, we hope, consistently. In the general good nothing is more vital now than the existence of a strong national organization to work for uniform laws, to labor for highway improvement, to accumulate and distribute touring information, and to conserve generally the rights of automobilists. As long as the A. A. A. endeavors to meet these obligations—even though it does not always succeed—just so long will THE AUTOMOBILE use its wide influence to help the organization in its commendable work. It may be that the A. A. A. will find it advisable to shift more of its offices and its finances to the State divisions, and there may be other changes in its governing ideas. But we have confidence in its directors, and believe they are actuated by a desire to obtain only the best results.

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"Quality" in Art and Automobiles. Reasons why a certain class of automobiles command high prices are given in an article in this issue, which describes some of the processes employed in construction in an American plant. This one was selected as a fair example of establishments in which only expensive machines are turned out.

To produce the best possible in any branch of manufacturing means an increase of cost all along the line and for this the customer must pay. It therefore becomes a question for him to solve as to what price he will pay. The same question has to be answered in the decision to purchase any article in which the labor cost forms the most considerable item of expense in its production. A man who wants a pocket timepiece can fill his need anywhere from an Ingersoll dollar watch to a Riverside Maximus in a gold case costing a hundred times as much. For ordinary practical use one will serve the purpose as well as the other when in running order, and neither will be worth much for its original purpose if the mechanism is out of order.

The difference between one and another in watches or automobiles or even steamships, if you please, is not to be measured merely by an utilitarian rule. There is that subtle difference which in the fine arts is known as "quality"; an intangible, indescribable, something that can be seen and felt but cannot be expressed in language. It is the essence of art. There are some who cannot sense it, others who care nothing about it, and many who cannot afford its possession in its more expensive forms. There is, however, a minority to whom it is very precious and who can afford to gratify an inborn or cultivated taste; and this minority, whether in the field of Art or Automobilism, will always include those patrons with whom the question of price is not the determining one.

America is gradually freeing herself from Europe in meeting this special demand and the rate of progression will be greatly increased when the knowledge of what can be obtained from domestic establishments is more widespread.

✷

Remedy in Construction of Better Roads. One of the most significant sections in the report of the British Motor Commission refers to the dust-raising qualities of automobiles, which, the report states, "has been the source of far more popular indignation than excessive speed or dangerous driving." Unquestionably one of the most vital problems connected with automobiling is the dustless highway, and to secure it is a proposition that demands the most serious attention of our road builders. The British Commission admitted that it could not suggest how the nuisance could be alleviated by any alteration in the form of the car, and its deduction was that the remedy existed only in the construction of better roads.

It recommended, nevertheless, that all fees accruing from automobiles should be expended in the improvement of existing roads with the particular object of prevention of dust. The automobile, to a great extent, makes the road untenable for cyclists and pedestrians, and we might as well admit the fact without resorting to subterfuge. Of course, the automobile is here to remain, and to become the most general method of transportation for pleasure and commercial purposes, and if the present highway does not answer we must provide a road surface that will meet the new conditions. We shall be pleased to print any comments that careful thinking automobilists may have on this most important subject.

THE NEXT A. A. A. TOUR.

There seems to be a growing sentiment that the A. A. A. Tour of 1907 should be a pleasure event, with the idea of a strictly run contest for the Glidden trophy practically given up. Mr. Glidden had in mind, when he first offered a trophy, a pleasure tour, and not a contest with hard and fast rules. The 1905 event, though in the main for pleasure pure and simple, was not much more satisfactory than the 1906 journey, with its strenuous contention. Exactly how to subordinate the contest feature and still have some sort of a struggle for the trophy, is a puzzle. Here are some recent comments from Mr. Glidden:

"I want to do all I can to help the industry in the United States, as well as to encourage touring, which, I believe, is of great benefit to humanity. If the manufacturers make it too much professional, and lose the prestige of the tour, it will be serious for their interest. The press of the world publishes thousands of words throughout the year regarding the tour; if it were an endurance contest a few lines would tell the story.

"It is, therefore, up to them to make it a tour that amateurs may drive in with members of their family, especially a large number of ladies. The A. A. A. should conduct it, and provide well for all who are willing to pay for the accommodations desired. It would be a serious reflection on the ability of the automobilists of the United States to have it said that there were not brains enough among them to conduct a tour of this character. The press of the country, including the trade papers, profit from the tour in the way of advertising and circulation, and thousands are interested in its progress, which was shown by the columns published daily while the 1906 tour was on. Everyone should do all in his power to assist the A. A. A., and the manufacturers ought to help draft a set of rules that amateurs could drive under with pleasure. The value of a tour in which there would be 100 amateur entries, carrying 400 passengers, cannot be estimated. Do not lose sight of the tour; forget the endurance contest as far as machines are concerned. All join hands and make it a tour as far as possible, and watch the grand results to the manufacturers."

A Tour from New England to Virginia.

A tour stretching from New England to Virginia is a suggestion that seems to have met with much favor, and Augustus Post, of the A. A. A. Touring Committee, is to meet the officials of the Jamestown Exposition at Norfolk the latter part of this month. Mr. Post will drive his White steamer to Norfolk by way of Philadelphia, Baltimore, Washington, and Richmond. On the return he will be accompanied by R. H. Sexton, of the Exposition, and H. H. Trice, of the Norfolk Automobile Club.

Gen. Louis Victor Baughman, of Frederick, Md., writes to Mr. Glidden regarding the visit of the automobilists South next year as follows:

"I am delighted to learn that the automobilists are looking with some favor upon a trip to the South next year. Permit me to suggest for the consideration of the committee a route as follows: New York to Philadelphia, Lancaster, York, to the battlefields of Gettysburg, then on to Frederick, where the old National Turnpike can be taken, passing Braddock's Heights, the battlefields of Antietam, or Sharpesburg, crossing the Potomac river at Shepardstown, on to Winchester, then up the famous Shenandoah valley pike, passing the battlefield of Fisher's Hill, and other interesting places. Then to Luray Caverns, Stanton, Natural Bridge, Richmond, and Norfolk, to Jamestown. On the return the route could be selected through to Washington, Baltimore, and Philadelphia. The roads as far as the Natural Bridge are fine, and to Jamestown they improve."

A. L. A. M. NIAGARA FALLS MEETING POSTPONED

The August meeting of the A. L. A. M., scheduled to take place at Niagara Falls, has been indefinitely postponed on account of the inability of prominent members of the association to be present on the dates designated. The session will take place at a later date, which has yet to be decided upon.

ANOTHER NOTABLE MOVE BY FORD COMPANY.

DETROIT, MICH., August 13.—Another sensation in automobile prices will soon be forthcoming, according to persistent rumors in local trade circles. The Ford Motor Company is back of the present move, which embraces placing on the market a moderate-priced five-passenger touring car. With a view to preparing for the largely increased demand for cars that would follow such a move, it is proposed to amalgamate the Ford Motor Company, the Ford Manufacturing Company, and allied companies, adding a number of auto supply and material companies, the object being to manufacture and handle everything in the auto line. This would place the Ford Motor Company in a position to turn out complete machines independent of other concerns. Should the plans be carried out, the largest auto plant in the world would be the outcome.

While admitting that there is foundation for the rumors, officials of the company decline to confirm the reports at this time. It is considered significant, however, that President Henry Ford, Vice-President John Dodge, and Secretary-Treasurer James Couzens have been negotiating for a site, several locations having been considered.

PHILADELPHIA'S ACTIVE TRADE ORGANIZATION

PHILADELPHIA, August 13.—The Automobile Manufacturers' and Representatives' Association, the title decided upon for the organization of local tradesmen recently formed here, was permanently launched last Friday night at the Hotel Majestic.

The following officers were elected: President, George H. Smith, of the White Garage; vice-president, F. C. Vanderhoof, of the Ford branch; secretary-treasurer, I. J. Morse, of the Locomobile branch. The board of directors will be made up of the above, with R. H. Blake, of the Knox branch; William F. Smith, of the Rambler branch, and A. E. Maltby, of the Winton branch.

After the adoption of the constitution and by-laws there was a general discussion of the objects of the association, principal among which is the remedying of the present system of "holding up" automobilists on slight provocation, a habit to which country constables are greatly addicted—to their profit.

CAN NOW SUPPLY DEMAND FOR TIRES.

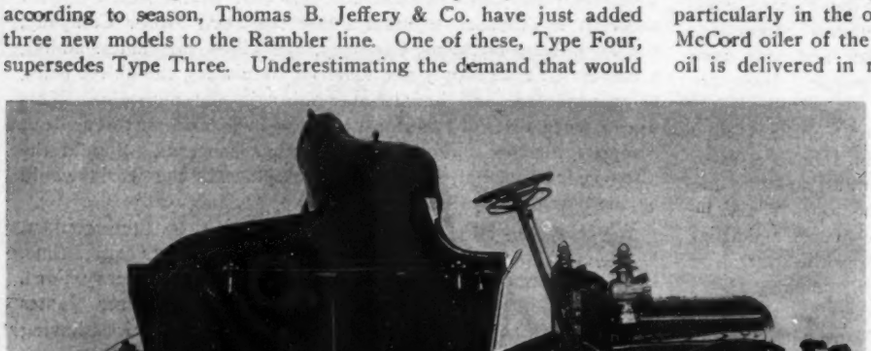
The Ajax Standard Tire Company, of New York, reports that its factory at the foot of East One Hundred and Sixth street is now prepared to meet all demands for tires, an increase in manufacturing facilities having been made necessary by the many orders received. The Ajax company is a concern organized by a number of automobile manufacturing concerns including the Ford Motor Company, the Maxwell-Briscoe Motor Company, the Mitchell Motor Company, and other firms comprising the American Motor Car Manufacturers' Association, these manufacturers desiring to control the production of the tires used on their cars. While the Ajax company was at first only able to supply the tires required by its stockholders, it can now cater to others. The company was formed in November, 1905. It is a matter of interest to users of tires that the Ajax company guarantees its tires to give proper service for at least 5,000 miles running.

IT IS NOW WYCKOFF, CHURCH & PARTRIDGE.

On August 9 the name of Wyckoff, Church & Partridge was placed above the door of the big establishment at the corner of Broadway and Fifty-sixth street, New York City, formerly conducted by the Decauville Automobile Company. The former name had become misleading owing to the fact that the concern now represents three foreign makes and two domestic cars. C. F. Wyckoff will remain, as in the old company, president; A. W. Church will continue to be the secretary, and E. S. Partridge also continues as vice-president. Wyckoff, Church & Partridge have one of the largest garages in the metropolis and a very complete machine shop.

NEW MODELS OF THE RAMBLER LINE

FOLLOWING the policy of presenting new models as they are developed or as the demand requires, rather than according to season, Thomas B. Jeffery & Co. have just added three new models to the Rambler line. One of these, Type Four, supersedes Type Three. Underestimating the demand that would arise for this car, arrangements were made for a limited number of bodies and equipment, with the result that the entire output was disposed of long before it was possible to make deliveries. As it was necessary to go back to the very beginning in the construction of a new lot of these cars, changes have been made mainly in the body lines to conform with later ideas in design. The chassis remains the same as in Types One and Three, except in the slight extension in the wheel base. The familiar two-cylinder engine and planetary type of transmission is used, together with the usual auxiliaries of throttle control and automatic timing of ignition. The body is practically identical with that on the four-cylinder Model 14, with curved metal dash and rubber-covered running boards. Wheels are 30 inches in diameter, fitted with 4-inch tires, either G & J or Dunlop. Finish is in royal blue and highly polished brass. Price, with complete equipment, including lens mirror gas headlights with the latest type cylindrical generator, oil side lamps and tail lamp, horn, wrenches, oilers, pump and repair kit, is $1,350.

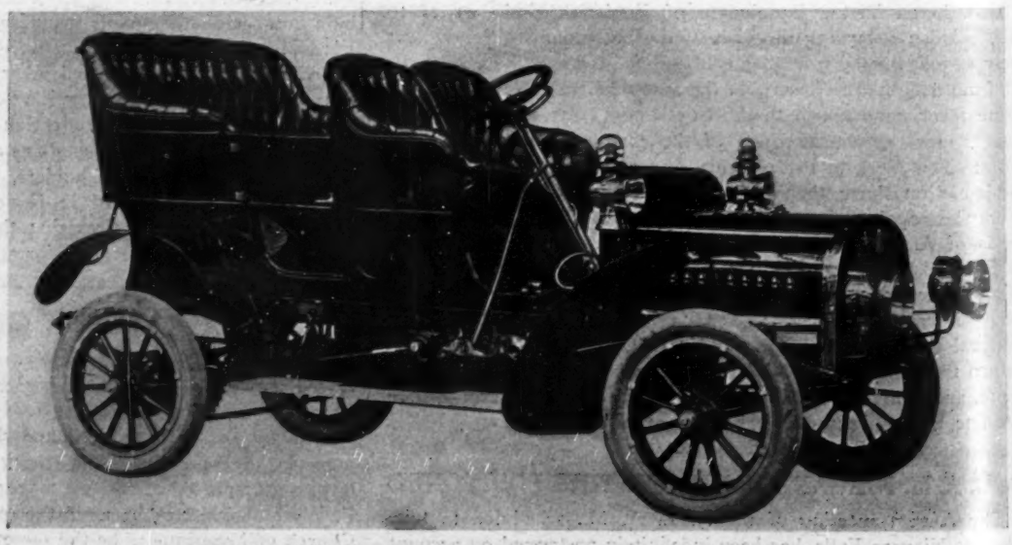


MODEL 19, A NEW RAMBLER WITH SIDE-TILTING TWO-PASSENGER BODY.

While Type Three was hailed a great proposition for the price, Type Four, with its longer body and aristocratic lines, is meeting an even more rapid sale.

In view of the growing demand for a two-passenger car with all the power and road capacity of the large touring cars, Models 19 and 20 are now ready for delivery. Model 19 is, in brief, the Type Four chassis fitted with a two-passenger body as per illustration. Some changes are made in the matter of appurtenances, particularly in the oiler and batteries. The former is a six-feed McCord oiler of the mechanical positive sight-feed type, by which oil is delivered in measured quantities to the various points of requirement. The sight feeds are located on top of the oil reservoir in full view of the operator, whereby the action may be noted at all times. The spark coil is the latest double-unit type fitted with switch and removable plug. The battery is a six-volt, sixty-ampere storage cell, carried in a highly-finished box on the running board. This equipment has been found, by careful test both in the factory and on the road, to be the most efficient and generally economical of any now in use, and, owing to the intense spark delivered therefrom, ignition troubles are almost entirely eliminated.

A particular feature that will appeal to the experienced operator is the method of body attachment. At each side of the frame are two lock hinges of such design that, by slightly releasing two knurled lock nuts, the body may be swung to the other side, as shown in the illustration. As the hinges on each side of the frame are identical, the body may be swung either way as may be desirable to obtain access to either engine or transmission gear. As there is absolutely no connection whatever between power plant and body, by releasing all four locks the body may be lifted entirely clear from the frame, the whole operation being done within two or three minutes. By this arrangement the entire power plant is as accessible as when the machine was assembled on the factory floor, and many will take advantage of this condition to keep their entire chassis as clean as the exterior of the body which, while possibly unnecessary, is certainly a desirable condition. The accessory equipment of this car is identical with that above described in connection with Type Four, and the price is $1,250. The torpedo back of this body is removable, being a plat-



NEW RAMBLER TYPE FOUR WITH FIVE-PASSENGER SIDE-ENTRANCE BODY.

form or floor which may be used for packing luggage on extended tours or for any purpose desired. This model is also furnished with detachable side-entrance tonneau and interchangeable with the torpedo back, thus making it a five-passenger touring car. With this addition the external appearance is practically identical with that of Type Four. The price, so equipped with full line of accessories, is $1,450.

The first of this model to leave the factory was delivered to Dr. H. A. Robinson, of Kenosha, who immediately started therewith on a trip through Canada. He covered somewhat in excess of 2,000 miles, and experienced no troubles whatever except a matter of one tire puncture, and some little trouble with the spark coil which was readily remedied. This is hardly in accordance with the theory that the first of any new model is sure to be defective and require considerable attention to get it into running order. It is also worthy of note that this was the Doctor's first acquaintance with an automobile, and he was, therefore, not a full-fledged expert at the time of starting on his trip, though he now asserts his right to that title.

TO MAKE A NEW CANADIAN CAR.

MONTREAL, Aug. 13.—The Montreal Motor Company, capitalized at $250,000, is the name of a new concern organized in Montreal by Lou D. Robertson, manager of the Eastern Automobile Company, to manufacture high-grade automobiles after a French model, to sell at about $5,000 each. Prominent Montreal capitalists are interested. The new car, which will be called the Monarch, will be made up mainly of French and English parts, and Mr. Robertson sailed a few days ago to make the necessary arrangements in Europe.

In Montreal particularly there is a demand for high-grade cars. Most of those sold have been of British or Continental make, there being only one high-grade American automobile in the city. Mr. Robertson claims he can sell the Monarch at a price $1,000 lower than that of an imported car of the same quality. He will have two sample cars out from England in November, and plans to exhibit them at the New York automobile show in January. He says, also, that he will have a car in next year's Glidden tour. Among other distinctive features the car will have a fourth gear for high speeds, the third gear answering for most requirements from 4 to 30 miles an hour.

A RUBBER QUARTETTE'S VISIT TO DETROIT.

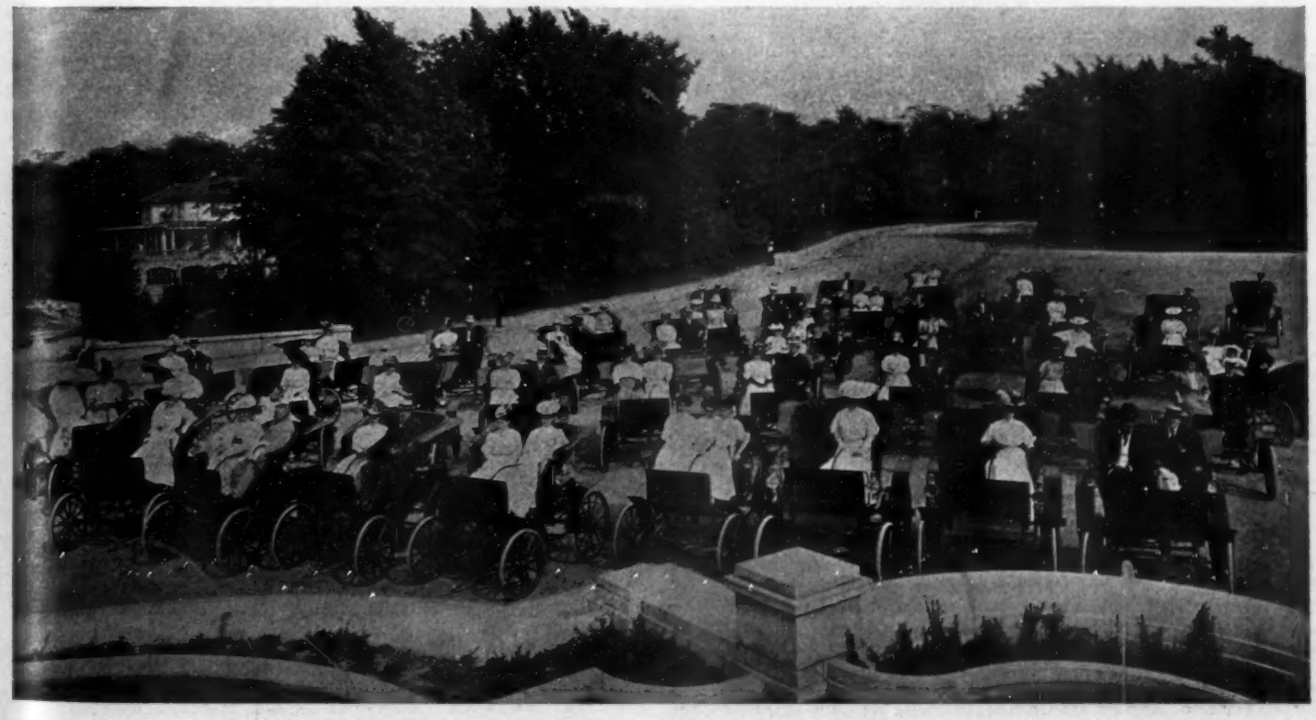
DETROIT, MICH., August 13.—A round dozen of the most prominent figures in the rubber industry in America were visitors to Detroit last week, the occasion being the formal transfer of the new million dollar plant just completed to the Morgan & Wright Rubber Co. During their stay here the visitors were

A RUBBER QUARTETTE: MESSRS. DALE, BUTLER, HUNTER AND LANG.

given an automobile ride about the city, the accompanying picture showing a quartette of the party in a 50-horsepower Wayne touring car. Reading from left to right they are C. H. Dale, president of the Rubber Goods Manufacturing Co., New York; C. J. Butler, president of the Morgan & Wright Rubber Co.; Charles Hunter, vice-president of the Rubber Goods Manufacturing Co., and Valentine B. Lang, vice-president and general manager of the Hartford Rubber Co.

CHICAGO DEALERS' HILL CLIMB SEPT. 6.

CHICAGO, Aug. 13.—The hill climbing contest which is to be held under the auspices of the Chicago Automobile Trade Dealers' Association, September 6, will be held at Perry hill, a little east of Algonquin, Ill. The distance for the contest is 455 yards and a running start of 100 yards will be given.



MANY PEOPLE IN BUFFALO USE BABCOCK ELECTRICS, JUDGING FROM THIS PICTURE TAKEN IN DELAWARE PARK.

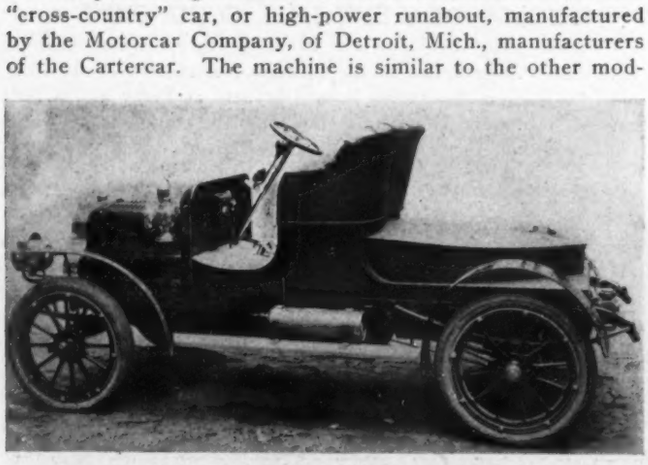
LINE-UP OF FRANKLIN CARS OWNED IN FORT PLAIN, N. Y., WHICH HAS BEEN NICKNAMED "FRANKLINTOWN."

EVIDENTLY BELIEVES IN AIR-COOLED CARS.

FORT PLAIN, N. Y., Aug. 13.—This place is called "Franklintown" because there are so many Franklin cars owned here and so few of other makes. This town has the name of owning more automobiles than any other place of like size in New York State. There are a score of Franklins owned here and in the immediate vicinity and only four other makes are represented. The accompanying picture was taken on a bright morning, but a few were missing and unable to be at the rendezvous. Fort Plain with its 3,000 population is beautifully located in the Mohawk Valley, and being on the direct line of travel the local automobilists have frequent visitors to entertain. In close approach to the Adirondack region, the local automobilists are enthusiastic lovers of outdoor life, and Camp Haymarket, only three miles from town on the banks of the Mohawk river and the Erie canal, is a popular run of a few minutes. Long excursions into the Adirondacks are frequent occurrences.

NEW HIGH-POWERED RUNABOUT.

A car possessing a number of attractive features is the new "cross-country" car, or high-power runabout, manufactured by the Motorcar Company, of Detroit, Mich., manufacturers of the Cartercar. The machine is similar to the other models of this make so far as its mechanical construction is concerned, the new feature being the two-passenger body. The car is known as Model D.



CARTERCAR MODEL D, A NEW HIGH-POWERED RUNABOUT.

The motor is of the double-opposed cylinder type, having cylinders of 5-inch bore and 4 1-2-inch stroke, and is rated at 20 horsepower. It is placed under the bonnet in front, with the cylinders crosswise. From the motor a short shaft extends to a friction change-speed gear, and final drive is by single chain to the live rear axle. Speed is controlled by means of a foot lever or pedal. As the illustration shows, the body has a turtle-back rear deck of the modern type, giving the machine a decidedly clean-cut appearance.

Friction change-speed mechanisms are apparently gaining in favor and are used in cars of all sizes. The fact that there is a brisk demand for friction-driven cars tells its own story of difficulties overcome.

A PRIZE WINNING CAR AND TROPHY.

The El Pizmo Beach endurance contest, recently run under the auspices of the Automobile Dealers' Association of Southern California, was undoubtedly one of the most important events of its character run on the Pacific slope, and attracted 110 competitors. The course covered 222 miles from Los Angeles to El Pizmo Beach, and was run under quite trying conditions. The Jackson car that won the cup was a $1,250 touring car, 20-24-horsepower, and secured the trophy by carrying its passengers through with a minimum expense per capita.

E. W. Robbins drove the car in the interests of the A. W. Gump Automobile Company, of Los Angeles, the California sales agent for the Jackson, and is shown seated at the wheel. The other two in the car are official observers. The photograph was taken at Santa Barbara. The second illustration shows the fine silver cup, 9 1-4 inches high and 7 inches in diameter, which was won by the Jackson.

A Jackson Successfully Negotiates the Arizona Desert.

Gila Bend is a town in Arizona, close to the Mexican Border, which is given up almost wholly to mining and mining interests. Down there, after leaving the railroad, the people have always depended on bronchos, burros and mules for means of transportation, and even those sturdy animals, after a short and burdensome life, have succumbed to the torrid heat and burning sands of the region. The problem seemed a hopeless one—until recently, when a representative of one of the leading copper mining companies at Gila Bend bought a two-cylinder Jackson car at the garage of the A. W. Gump Automobile Company, Los Angeles, and drove it over and into the desert and put it in commission between Gila Bend and their mine, sixty miles away. From all accounts the route is such as would pale the face of the doughtiest Glidden tourist. It was sixty miles over desert sand, through about twenty-five arroyos, volcanic rock, two miles through a crater, and no roads at all, just simply trails. Mr. Robbins, who recently accompanied the car from the coast, made this trip with a Jackson Model C four times in succession, with the temperature 127 degrees, which is understood to be normal at this season of the year, and without the slightest trouble of any kind. This may lead to the adoption of the automobile in the extreme southwest.

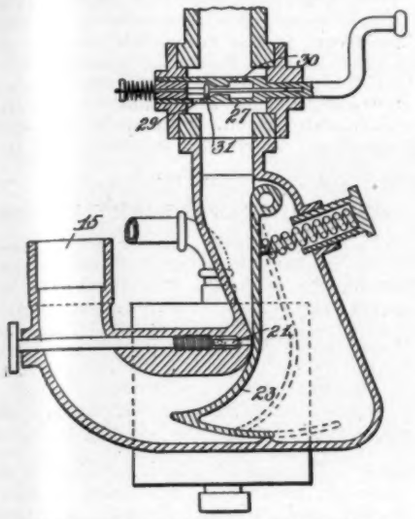
THE JACKSON THAT WON THE EL PIZMO ENDURANCE CONTEST.

Patents

Carbureter.

No. 825,499.—T. L. Sturtevant, of Quincy, and T. J. Sturtevant, of Wellsley, Mass.

This is an automatic carbureter of somewhat unusual design. The gasoline passes through a float chamber, indicated by the square partly dotted, and issues at the orifice controlled by the needle valve *21*. The



STURTEVANT AUTOMATIC CARBURETER.

air enters at *15*, and pushes back the swinging shutter *23* to an extent depending on the velocity of the air stream, consequently the velocity of the air past the spray orifice is always sufficient to atomize the fuel. The throttle valve has an enlarged central portion *27*, which contains a bypass duct to let the engine run free when the clutch is released. It has an entering aperture *29*, from which the air goes past a valve *31*, held normally open by the spring shown. As the suction increases this valve is wholly or partly closed, thereby checking the speed of the engine. The outgoing orifice is shown at *30*.

Power Pump for Tires.

No. 825,572.—M. A. Baker, of Los Angeles, Cal.

This is a small piston air pump which may be connected at will to the crankshaft of the engine through a small friction clutch, operated by rocking or swinging the pump bodily to or away from the end of the engine shaft. In another form the pump may be rested on the ground and held by a stirrup, and it receives power through a flexible shaft from the engine

Tire Inflating Pump.

No. 825,592.—A. T. Fisher, of Brooklyn, N. Y.

This is a small opposed cylinder piston pump operated through single reduction gearing from a friction wheel bearing against the flywheel. The pump may be shifted bodily by an adjusting screw or otherwise to bring the friction wheel against the flywheel.

Spark Plug.

No. 825,856.—D. B. Mills, of East Orange, N. J.

This invention covers the brass bushing of the Rajah spark plug. It has a thin edge which turns over to a greater or less extent when it is forced against the rounded shoulder of the porcelain insulation. thereby at the same time protecting the porcelain and obviating the necessity of using two gaskets.

Brake Mechanism.

No. 824,151.—C. Schmidt, of Detroit, Mich.

This is the Packard arrangement of internal and external brake shoes working on a single brake drum, and operated, one by the foot and the other by the hand.

Muffler.

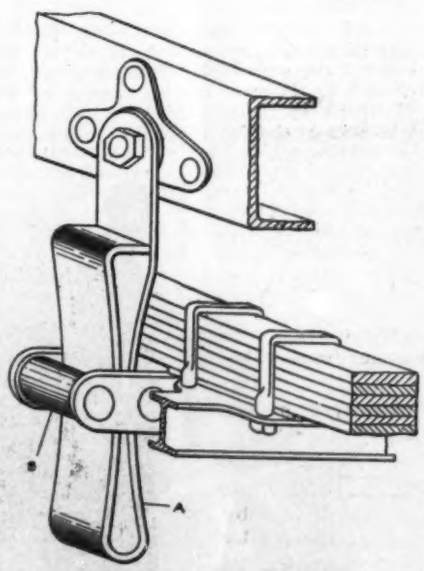
No. 825,010.—B. W. Snow, of Syracuse, N. Y.

This is a muffler having a cylindrical shell entered by the gases at one end. The gases are obstructed by baffle plates spaced at increasing intervals from the entering to the outlet end.

Shock Absorber.

No. 825,083.—G. E. Shippey, of Pittsfield, Mass.

This shock absorber consists of a flat spring plate *A*, bent as the drawing shows, and compressed between two rollers *B*. As it approaches the upper or lower limit of



SHIPPEY'S SHOCK ABSORBER.

its movement its motion is increasingly resisted by the compression to which it is subjected, and this compression, rather than friction, tends to check its motion.

Device for Preventing Back Firing.

No. 825,835.—G. Holloway, of Clyde, O.

This is the screen employed in the transfer passage of the Elmore 2-cycle engine. It is a combination screen of wire gauze stiffened by a perforated sheet of iron, and its function is to prevent flame striking back from the transfer port from spreading to the interior of the crankcase. The screen is made as long as possible, and placed at a steep angle across the entire length of the transfer passage so as to give the maximum opening for the charge to pass through.

Safety Starting Arrangement.

No. 826,250.—T. B. Jeffery, of Kenosha, Wis.

This is an arrangement connecting the spark retarding device with the mechanism for relieving the compression on starting the engine. A starting cam is employed, and mechanism is used for shifting the exhaust valve lever from one cam to the other. The spark retarding mechanism is attached to this so that the two must be moved together.

RECENT INCORPORATIONS.

Senor Automobile Company, New York; capital, $50,000. Directors, B. F. Steins, G. A. Knoblock and N. B. Vanse.

Flatbush Motor Car Company, Brooklyn, N. Y.; capital, $6,000. Directors, D. M. Boe, J. M. Botts and A. C. Ruprecht.

Contest Branch of Maxwell-Briscoe, New York. Capital, $6,000. To sell and operate motor vehicles, motor boats, airships, etc.

Mitchell Motor Company, New York; capital, $30,000. Directors: B. Brooks, J. J. Gormly and C. H. Frederick, of New York.

Ostler & Zanes Company, Newark, N. J.; to manufacture motor vehicles; capital, $100,000. Incorporators: Alexander Ostler, Delancy Zanes and W. Eugene Turton.

J. & E. Homan Company, New York; capital, $10,000. To manufacture gas and gasoline engines. Incorporators: Jackson A. Homan, Eugene Homan and Frank D. Homan.

Michelin Tire and Supply Company, Chicago, Ill.; capital, $20,000. To deal in automobiles and supplies. Incorporators: Clifford C. Bradbury, William T. Jones and A. C. Courtenay.

Worth Manufacturing Company, Evansville, Ill.; capital stock, $100,000. To manufacture and sell automobiles. Directors: John C. Zutt, A. F. Karges, Willis M. Copeland, James M. Worth and William O. Worth.

THE GROWING GARAGE LIST.

A garage has been built at Electric Park, Kansas City, Mo., for the use of visitors who go to the park in automobiles. An expert automobile repairman is in charge.

Spokane will probably have a new $50,000 garage before the summer is over. Charles White and C. D. Bibbins, two of Spokane's wealthy property owners and mine operators who are back of the new enterprise, are now looking for a suitable site. At present every garage in the city is crowded to its capacity, and automobile machinists have more repair work on hand than they can handle.

NEWS AND TRADE MISCELLANY.

An addition of 20,000 square feet of factory space is being added to the automobile plant of the Pierce Engine Company, Racine, Wis.

The American Motor Truck Company, Lockport, N. Y., is planning to build a few light touring cars of the four-cylinder type for use of the company officers.

The Pierce Engine Company, Racine, Wis., for 1907 will make but one type, a four-cylinder 40-horsepower high grade car, and models of which will, it is expected, be ready about September 1.

Alterations and refurnishing of the Chicago branch of the White Company at 240 Michigan avenue have been completed, and Manager Webb Jay now has one of the finest appointed salesrooms in the country.

The F. A. Neider Company, Augusta, Kentucky, has increased its capital from $50,000 to $100,000 fully paid, and are building additional factories to make double their present capacity in curtain fasteners and carriage fixtures.

The Auburn Automobile Company, of Auburn, Ind., has leased the plant of the Model Gas Engine Company and will move its factory to that building about September 1. Enlarged quarters were necessary and the new factory will furnish ample room to take care of the company's increasing business.

An entirely new use for shock absorbers has been found by the White Sewing Machine Company, who are putting them on ambulances. The White steam ambulance, which the company furnished recently to the Philadelphia General Hospital, and which has been doing such good work there during the past few weeks, is fitted with Truffault-Hartford shock absorbers. In case of necessity they permit the wagon to be driven fast, without disturbing the patients; the shock absorbers relieving all the jar.

Of late much has been said of fool proof transmissions. But fools are not the only ones who impose on transmissions. A few days ago a gentleman of more than ordinary intelligence purchased a Columbia car. The salesman who secured his order gave him thorough instruction in operating the machine, and the new recruit did very well for a few days. Finding himself in a pocket on a crowded city street, he attempted to shift the gears without throwing out the clutch. "No, he didn't strip the gears," said the salesman when asked about the affair. "We provide for that, and make the gears in such a way that they are practically immune to breakage."

Ability to win races at long and short distances in competition with large fields of other cars is a pretty reliable indication of the power and consistent running of a machine. For this reason the Mitchell Motor Car Company, of Racine, Wis., is much pleased at the showing their machines have made in contests this season. Among the victories are the Minneapolis hill climb, in which the Mitchell had ten competitors; 100-mile race at the Hawthorne track, Chicago; 50-mile endurance contest at Milwaukee; three 5-mile races at Detroit; 50-mile touring car Derby at Detroit. In the 100-mile race at Milwaukee the record for the distance for touring cars was lowered, and in the 50-mile race at Milwaukee a new mark was set for that distance.

"To show how uncertain are the results of the so-called reliability tests," says Tom Hay, manager of the Ford branch in Chicago, "my car was penalized 30 points simply because I was a bad driver. There were twenty-five heavy grades on the route of the recent Chicago reliability run. My little Ford runabout took all the heavy ones on the high and at a law-breaking clip. Then, on a little grade that was so slight I did not even open the throttle a notch to take it, my carbureter stuck just for an instant. The car slackened, and, before I realized what had happened, I had to take the low. Of course, it was only for a moment, but it cost me thirty points. That was fair and according to Hoyle, but it makes a fellow hot to think his car had to be penalized just because he was a bum driver."

Registrations of automobiles at Albany during July, as made public at the New York headquarters of the American Motor Car Manufacturers' Association, show the following large record: Cadillac, 114; Maxwell, 74; Pope, 73; Olds, 49; Franklin, 44; Ford, 41; Autocar, 41; Reo, 40; Rambler, 38; White, 35; Pierce, 33; Buick, 32; Winton, 31; Locomobile, 29; E. V. Co., 29; Thomas, 27; Stevens, 27; Rainier, 22; Panhard, 21; Waltham, 19; Packard, 18; Haynes, 15; Peerless, 14; Mercedes, 13; Mitchell, 12; Jackson, 12; National, 11; Darracq, 10; Lansden, 10; Royal, 10; Daimler, 10; Hotchkiss, 9; Fiat, 8; Babcock, 8; Columbus, 7; Renault, 7; Automobile Equipment Company, 6; Mobile, 6; Rochet-Schneider, 6; Northern, 6; Baker, 5, and Clement, 5.

PERSONAL TRADE MENTION.

Boyd Richards, formerly of Huntington, Ind., where he was manager of the automobile works of Bartlett & Frazier, has purchased an interest in the Jackson Auto Company, of Kansas City, Mo., and been elected its general manager.

A. H. Chadbourne, one of the early ones in automobiling in Philadelphia, has severed his connection with E. B. Gallaher, of New York City, for whom he looked after Cleveland interests in the Metropolitan district. Mr. Chadbourne has not decided upon future connections, but will take a vacation in Maine.

Daniel Boone, the well-known football star of the Chicago University eleven, has entered the automobile trade, having purchased an interest in the agency of the Northern in Chicago of W. G. Tennant, who will in the future devote his personal attention to the sale of the Mercedes. Both agencies will continue to occupy the Michigan avenue store.

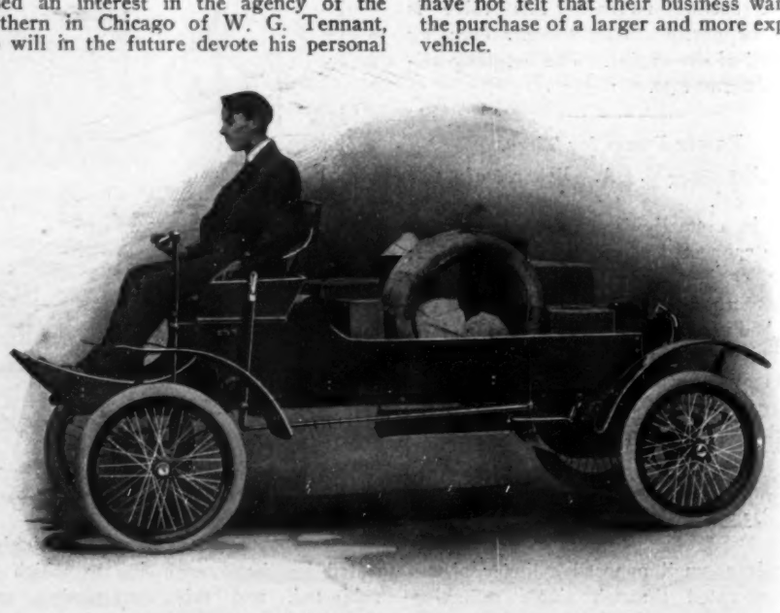
E. S. Partridge, of Wyckoff, Church & Partridge (formerly the Decauville Automobile Company), of New York City, returned home last Saturday from a two months' visit to England and France. Mr. Partridge did considerable touring in both countries, and expresses the opinion that the English highways appeal more to the admirer of scenery than do those of France.

General Manager Alfred Reeves, of the American Motor Car Manufacturers' Association, left New York on Monday, August 13, on a Western trip in the interests of the organization and in connection with matters incidental to the automobile show at the Grand Central Palace in December. He will be absent from New York for about ten days, during which time he will visit Cleveland, Detroit, Indianapolis, and other important automobile manufacturing centers.

NEW LIGHT DELIVERY WAGON.

Profiting by the experience already gained from the extended use of the Orient buckboard, the Waltham Manufacturing Company, of Waltham, Mass., has placed on the market a light delivery wagon for handling loads not exceeding 350 pounds in addition to the driver, embodying the salient features of the well-known buckboard.

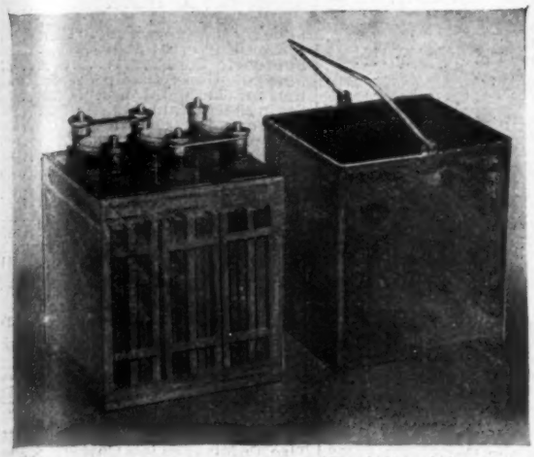
As the illustration shows, the little car carries a box body with the driver's seat in front, and the motor is placed on the rear axle. The motor is the same as in the pleasure buckboard, developing 4 horsepower and driving through a friction change-speed gear. The ratio of the drive has been altered, however, so that the delivery wagon has a maximum speed of from 12 to 15 miles an hour, thus making it better able to cope with hills and bad roads under load than if designed for higher speeds. Tiller steering is used. A mackintosh top will be supplied on order, and another extra is a detachable rear seat, so that four passengers can be carried. The wheelbase is 89 inches and the tread 42 inches. The manufacturers believe that this machine will fill a place that has been open for something lighter than the ordinary type of motor delivery wagon, and that the low price will bring it within the reach of many who have not felt that their business warranted the purchase of a larger and more expensive vehicle.



NEW LIGHT DELIVERY WAGON OF THE WALTHAM MANUFACTURING CO

INFORMATION FOR BUYERS.

LIGHT STORAGE BATTERY.—Light weight is, of course, very essential in a flying machine, and when the Müller Porous Plate Accumulator Company, of 205 West Forty-first street, New York, was called upon to make a storage battery for the ignition system of an aeroplane motor they made it as light as they could. The resulting battery, which is shown in the illustration, consists of three cells, each cell having a capacity of 25 ampere hours and a voltage of 2.2, so that when connected in series the total voltage is 6.6. The complete battery, with the japanned metal carrying case shown beside it, weighs but twelve pounds and the outside dimensions, over the case, are 4 1-2 by 5 by 6 1-2 inches. The plates are placed in celluloid jars, and strips of the same material are used as separators. The manufacturers state that the reason these cells are so light is that they are made with a new type of porous plate, and the active material is freely exposed to the action of the electrolyte, the result being that a very large active surface is available. Thus the plates can be made correspondingly light without reducing the effective area. The manufacturers state that the Müller batteries can be discharged and charged at a very high rate without damage; that they will not become useless if left standing for some time after discharging, but will be in good working order after an ordinary recharge. Patented vent covers are fitted which make the spraying of the acid impossible. A number of sizes of ignition batteries are made by this concern, varying in capacity from 25 to 75 ampere hours, in weight from 8 to 33 pounds and having from two to four cells.



MULLER LIGHT WEIGHT STORAGE BATTERY.

IGNITION DYNAMO.—Several features of interest are embodied in an ignition current dynamo manufactured by the D. K. Electric Company, of 222 Chestnut street, St. Louis, Mo., under the name of the Duncan Igniter. The machine generates a direct current and is fitted with a voltage regulator and an automatic cut-out that switches in the auxiliary battery current when the rotative speed of the dynamo falls to a point where the current generated is insufficient for effective ignition, and cuts out the battery and brings the dynamo into the circuit when the rotative speed is high enough to generate the necessary current for the spark. The armature shaft is of tool steel, and on it is mounted the armature core of soft annealed iron; the shaft and core are turned accurately after being assembled. The shaft is 7-16 of an inch in diameter. After winding, the armature is coated with oil-and-water-proof varnish and baked for ten hours at a temperature of 180 degrees. Hard-drawn copper segments constitute the commutator and are insulated with amber mica; the ends of the segments and the spool are enameled to keep out moisture. Box-type brush holders are used and tension on the brushes is maintained by spring levers bolted direct to the terminals, so that wire connections are unnecessary. The yoke is of soft wrought iron, accurately machined to receive the pole pieces. The phosphor bronze bearings are long, to give good wearing surface and properly support the armature shaft. Field coils are taped and then varnished and baked,going through the same process as the armature. An interesting feature of the machine is the regulator. This is a coil of wire placed above the field pieces and covered by a casing. There is an armature at each end of the coil, which forms, with its core, an electro magnet. The manufacturers state that this coil regulates the voltage perfectly, regardless of the speed of the armature, and also serves as an automatic cut-out, as already stated, the cutting-out action being effected by the strength of the current passing through the coil. The casing surrounding the coil is partly filled with oil of a variety used for insulation. The generator can be used without batteries if so desired, as the current generated at the speed attained when the engine is cranked is sufficient, the manufacturers state, to give an initial spark. The use of batteries is recommended, however, as with them the engine can be started "on the spark" and the very light service imposed on the cells makes them long-lived; the automatic switch obviates the possibility of short-circuiting and forgetting to switch in the dynamo and out the battery, or *vice versa*. A special form of friction-drive pulley is used, being designed to cushion the contact with the flywheel. Thus if dirt accumulates on the driving face of the flywheel, or if a small stone or other object gets between the pulley and the wheel, no damage will be done. With this type of pulley the dynamo can be bolted down to a solid foundation. Lubrication is effected by oil cups with wick feeds, and one charge of oil is enough for from 300 to 600 miles' running. The housing which incloses the whole machine is fitted with a door at the commutator end, so that the commutator and brushes can be examined readily at any time. The housing is practically water and dustproof. All parts are interchangeable and can be duplicated from stock. Drive may be by friction, by belt or by gears, as desired. The outside dimensions are 5 1-2 inches by 6 3-4 inches by 9 inches, and the weight 14 pounds.

GASOLINE SPECIALTIES.—Special appliances for the storage, handling and transfer of gasoline are manufactured by the Gilbert & Barker Manufacturing Company, of 82 John street, New York. Complete gasoline storage outfits are made with underground tanks and hand pumps. This outfit consists of a tank, fill pipe, vented cap, fill pipe sleeve and cap, pump of solid brass, pump pipe and cap, pump sleeve and cap, T-wrench and four feet of hose. Tanks are made of heavy galvanized steel, riveted and soldered—the riveting for strength and the soldering to make them tight—and all castings and joints are on top, above the gasoline level. Outside the tanks are given a coat of coal tar, applied hot and forming a preservative when the tank is buried in the ground. Tanks are made from 25 inches to 30 inches in diameter and from 30 inches to 87 inches long, having capacities from 60 to 260 gallons. Larger tanks are also made. Among other specialties the Gilbert & Barker company handles the Breeze gasoline funnel, which automatically strains the gasoline as it is poured into the tank and separates dirt and water from it; and a patented gauge stick carrying little pockets spaced an inch apart. The stick is thrust into the tank until it reaches the bottom and then withdrawn, when the highest pocket containing gasoline indicates, by the figures on the stick, the amount of fluid in the tank.

HARRIS LUBRICANTS.—Lubrication is not only important to the welfare of an automobile—it is absolutely essential; for without lubrication it would be impossible to run a motor to any purpose. So the automobilist cannot be too careful in selecting his oils, especially for the cylinders of his engine. Among oil manufacturers whose goods find favor among automobilists is the A. W. Harris Oil Company, of 328 South Water street, Providence, R. I. One user of Harris oils stated that after driving his car for 15,000 miles, including 1,200 miles of Glidden touring, the bearings were in excellent condition, not sufficiently worn to warrant tightening, and there was little or no carbon deposit in the combustion chambers. Three spark plugs put in last January are still in use, and the fourth would probably have been in commission if it had not been accidentally broken. The users stated that the plugs had not been cleaned during that time. Another automobilist, whose car went through the Glidden tour with a perfect score, expressed his appreciation of the excellent qualities of the oil, which he said had given entire satisfaction and had given him no trouble from carbonizing.

CURTAIN FASTENERS.—Automobile curtain fasteners, which the manufacturers, the F. A. Neider Company, of Augusta, Ky., declare will outlast the car, are illustrated herewith and are known as the Peerless fasteners. They have no springs, and are made to clinch, drive, screw or rivet, for single or double curtains. The clinch style

PEERLESS BRASS CURTAIN FASTENERS.

is shown here. The Peerless fasteners are made in polished brass, or are japanned to match the curtain and top material of the car. The price is stated to be very reasonable, considering the quality of the fasteners.

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